ELECTRICAL SOUTH

Serving the 18 Southern and Southwestern States

Adequate wiring gets special push in Kansas City campaign—page 18

NOVEMBER, 1954

KUHLMAN POWER TRANSFORMERS

made in the South . . . to serve the South

A 2500 KVA 3 phase Power Transformer ready for Southern Utility Service.

Recognizing the tremendous industrial growth of the South, Kuhlman, in 1952, was the first nationally known transformer manufacturer to establish a plant in the South. The location of this big modern division of Kuhlman at Crystal Springs, Mississippi is close to the center of the great Southern market. From this convenient location Kuhlman is offering outstanding service on its complete line of Power, Distribution, Dry Type, Saf-T-Kuhl, CSP and Street Lighting Transformers. Over 60 years of transformer craftmanship is your assurance of the outstanding quality, dependability, and long life built into every Kuhlman Transformer. Kuhlman's oldest customers are still some of their best . . . a true test of a product's service. Write, phone, or cable us for complete information.

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SIXTY YEARS OF PROGRESS IN THE ELECTRICAL INDUSTRY

160

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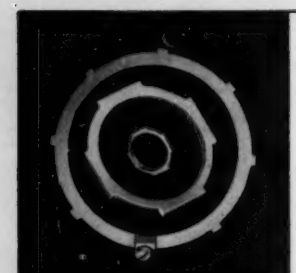
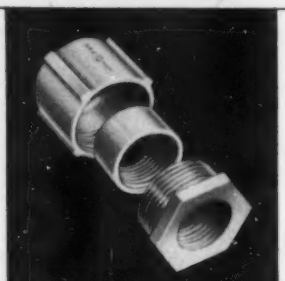
IT'S RIGHT THERE in the Gedney line... every fitting that you need for every sort of installation! And Gedney fittings are accurately machined and threaded... made of unbreakable malleable iron... individually inspected to assure you the lowest installed costs obtainable today! Always order Gedney fittings and you'll *always* make maximum savings of time and money.



CONDUIT LOCKNUTS — sizes from ¾" to 6". Sizes ¾" to 1½" are made of heavy nut lock steel... all other sizes, malleable iron. All sizes cadmium plated. Also bonding wedge locknuts, ½" to 6".



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CAPPED BUSHINGS—available in a standard range from ½" to 6". Made of unbreakable malleable iron, cadmium plated.

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CORNER PULL-IN ELBOWS — made in ½", ¾", 1", 1¼", 1½," and 2" sizes. Outstanding for space saving, machine wiring, easy wire pulling. Malleable iron, cadmium plated.

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ELECTRIC COMPANY

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Volume 34 Number 11

ANDERSON *dependability helped save Timmy's life...*

Every light that burns . . . every life-saving machine that operates in a hospital receives its electrical energy through hundreds of connections, from power plant to sub-station, and from transmission lines to a tiny switch. In steadily increasing numbers, more and more of these connectors, clamps, fittings and accessories bear the ANDERSON BRASS trademark. Power men all over the country recognize ANDERSON'S DEPENDABILITY.

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TYPE UP . . . BUS SUPPORT
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AND IT'S BETTER FOR SPANG, TOO—because the new plastic tape eliminates hand bundling . . . saves production time . . . speeds up deliveries.

Look for the new blue plastic tape bundle on SPANGLEAM EMT. It marks a *top-quality* product . . . the same *top quality* you find in all SPANG tubular products. Your SPANG Distributor has a complete line of all SPANG Conduit and fittings.

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ELECTRICAL SOUTH

SERVING THE 18 SOUTHERN AND SOUTHWESTERN STATES

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TO HELP THE BUSY READER—

Up to date wiring on the installment plan is the central idea of the year-long **wiring modernization plan** recently launched by the Electrical Association of Kansas City. Details of the program are given in the article beginning on **page 18.**

Twenty **all-electric homes** in the $25,000 to $35,000 class built by a Jacksonville, Florida real estate developer, literally "sold like hot cakes" partly because of their electrical features, which included heat pumps. **See page 23.**

All contractors at one time or another are faced with the problem of **keeping track of tools.** One Texas firm has found a solution in a novel arrangement of tags on a plywood board built by the company warehouse manager. **See page 24.**

Even with limited capital, it is possible for **electrical distribution for the small plant** to be made adaptable to company growth and satisfactory low-cost maintenance. The story of how a Maryland precision instrument manufacturer has accomplished this task is told in the article on **page 26.**

A **new outage monitor** which can be used to monitor breakers at unattended substations, on transmission lines, feeders or distribution circuits, has been developed. A representative of the manufacturer of the device discusses it on **page 28.**

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COMPARE . . .

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APPLIED FOR

Exclusive on the Ortho-77 is the Uni-Race channel for automatic alignment, the Plug-in Socket for safe handling without disconnecting the circuit and unheard of flexibility, and the rugged V channel with integrated construction for permanence of shape.

Ortho-77		Conventional
Reports show savings up to 50% in installation costs with the Ortho-77, which means that you can buy the Ortho-77 *installed* for the same price as ordinary fluorescent fixtures.	**OVERALL COST**	Installation costs of ordinary fluorescent fixtures average nearly *twice* that of comparable Ortho-77 installations. Although initial costs are in some instances lower, the overall installed cost of the Ortho-77 is favorable.
Uni-race sections can precede fixtures to the job. Easily and quickly mounted, they assure positive, permanent straight alignment automatically. Fixtures may be shipped when the building is ready for occupancy and can be hung without tools in minimum time.	**INSTALLATION**	In conventional installations, heavy fixtures often must be handled many times on the job. Permanent alignment is frequently difficult to maintain without accessories. Because of the tools and handling necessary, it is difficult to keep fixtures clean in mounting.
Fixtures of same wattages are interchangeable on the same Uni-Race. Lighting levels can be raised from two to four lite in a matter of minutes, or fixtures can be mounted at spaced intervals and made continuous anytime later without tools in a minimum of time.	**FLEXIBILITY**	Conventional fixtures offer virtually no flexibility in so far as fixture interchange or change of lighting layout is concerned.
Ballast replacement can be made in a matter of minutes by changing fixtures instead of parts. Repairs can be made in the shop at will and service on the line will not be interrupted *even while changing fixtures.*	**MAINTENANCE**	With conventional fixtures, it is necessary to suspend service on the entire circuit to make repairs. Frequently the working area is disrupted for several hours while this is being accomplished.

WRITE TODAY for descriptive folder giving details of the Ortho-77

GIBSON Manufacturing Co.

1919 PIEDMONT CIRCLE, N. E.
ATLANTA, GEORGIA

Economic comment

by J. Whitney Bunting, Ph.D.

Drought's dual role

◆ THERE IS always, it would seem, a little brightness in every drab condition. Reference here is to the prolonged drought which many of the southeastern states have found themselves enduring during the past three months. The lack of adequate rainfall has caused millions of dollars of crop losses in practically every form of farm operation and, until the winter rains come, little help seems to be in the offing.

It has been a frustrating season to the farmer but not to the construction companies or the home builder. The absence of rainfall has allowed this industry to proceed at a rapid pace, outstripping even the most optimistic forecasts of a year ago. This condition has led the construction industry into a foremost position as a major bulwark in the nation's economic picture. Even if a particularly rainy November and December should be in prospect the figures for the year will show a comfortable outcome.

Building picture

Success breeds success, the saying goes, and business progress seems to promote even more progress. Home builders, who would appear to have fairly well tapped the market for new houses, show a puzzled optimism. One, to whom I recently talked, could not fathom the reason for the heavy demand in the Atlanta area but was fairly convinced that demand would continue at a high level on into 1955. Even then he could not foresee the end of housing demand. Like so many other situations in the economic picture of today the causal factors in the high tempo of business conditions cannot be directly traced, but economic strength is present to an unusual extent.

Another phase of the drought problem that has worried many southerners is the effect that the rainfall shortage has had upon underground water resources. This is a particularly important problem for those industries who have located in the Southeast because of plentiful water reserves. Failure of such reserves to measure up to expected standards would cause a loss of many thousands of dollars and would break the back of southern industrial development.

Underground water supply

In spite of the fact that major area rivers have had a reduced water flow to unusually low levels, there appears to be no serious damage to the underground water resources. In fact, although the public has built up a tremendous fear of losing water resources because of recent shortages in the New York and California industrial areas, it requires several years of drought to affect basic water reserves to any appreciable extent. Thus, in spite of the presently severe effect upon agriculture, forest protection and industrial operations, if 1955 provides average or better-than-average rainfall there is no valid reason for worry about the future of the water level in the Southeast.

The main long-term water problem in this region continues to be inadequate reforestation after timber cutting. Even though people of the South should know better than residents of almost any other area in the nation that the soil must be protected, one can see evidence on every hand of poor timber management. The success of an area in the maintenance of sufficient water reserves is directly traceable to the care with which forest lands are protected. Water has an unfortunate habit of seeking the quickest and easiest route to the sea. Thus, to maintain land water reserves it becomes necessary to "trap" the water and prevent "runoff." The most effective and natural way that this can be accomplished outside of constructing huge dams and reservoirs is to provide adequate forests and forest lands, for these hold water back and prevent its loss to the sea.

Erosion in the South

Water that can freely run over the earth's surface causes erosion. The good top-soil washes away leaving the barren and unproductive sub soil for the farmer to work. Such soil does not produce good crops without extra care and fertilization, all of which adds heavy cost burdens to the farmer already besieged with the difficulty of matching income against outgo. Even so, many of our area farmers believe that the easiest and quickest way to make a favorable financial year is to cut their timber land indiscriminately. This usually is in spite of the fact that they have no productive use for the land thus cleared. Where this happens the farmer is merely causing a dangerous condition for himself in the years ahead.

In line with this problem of reforestation many thousands of new pine seedlings are planted each year to replace timber that has been cut for lumber or pulpwood purposes. Such seedlings need to grow and thus should be protected. However, in too many instances such seedlings do not thrive for the land is used for pasture for range cattle. The seedling is trampled and eaten by the cattle, thus ruining any hope that the land may return to a full timber stand.

Importance of reforestation

Even though seedlings may cost the planter little or nothing, there is no reason to assume that they have no value. Other sections of the nation, without fast timber growing potentialities, have lost their forest resources. They find it almost impossible to replace forests in a generation. Here there are still stands of good timber available that can provide a steady supply on into the future with proper care and replanting. For the future of the lumber supply *and* for the future of the fertility of the soil, the south must maintain adequate protection for forest lands.

Dr. Bunting, well-known southern economist, is president of Oglethorpe University, Oglethorpe Univ., Ga.

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...in any light

...without twisting

...no matter how dirty

Red conductors in Simplex Control Cables always read red. That's because they're positively identified by white printing on solid black background. They won't change color under different lights the way conductors with colored neoprene coverings do.

Simplex Control Cable conductors don't have to be twisted for identification because color coding is printed on both sides of every conductor at 2½-inch intervals.

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with PRINTED COLOR CODING

SIMPLEX WIRE & CABLE CO., 79 Sidney Street, Cambridge 39, Massachusetts

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HEAVY DUTY

PLUGS & RECEPTACLES

NEW pressure connectors; no soldering unless you prefer to do it.

NEW easier-to-wire interior assembly; comes out in one piece—just remove 2 screws.

NEW easier-to-interchange plug and receptacle interiors; no machining; no special tools.

NEW plug adaptability; takes any size portable cable up to full 30 amp. capacity.

Circuit-Breaking Features Make Arktite Safe at Full Load Without Disconnect Switches

Each contact is insulated in a separate chamber. Arcs formed while making or breaking circuit are snuffed out in arcing chambers by pressure-deionization and lack of oxygen. No chance of flash-over even if break is made at full load. With grounding contacts longer than load contacts, plug and tool are grounded *before* circuit is made and *after* it is broken.

New *Arktites* now available in 30 amp. size — 2-pole, 3-pole and 4-pole styles. Fully interchangeable with old *Arktites* — *same economical price.*

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NEW G-E MOTOR

Saves up to

HERE'S a new product that spells savings all along the line . . . from initial purchase to on-the-job operation. G.E.'s all-new Motor Control Center (Type DA7093) puts your motor control capacity in approximately *half* the space formerly required. It takes nine NEMA size one or six NEMA size two control units in one standard 90-inch trough. This means fewer sections to buy, fewer sections to find space for and fewer sections to maintain — a clean-cut case of dollar-and-cents economy.

More than a space-saver, this new Control Center incorporates engineering advances which drastically cut installation time, step up capacity, simplify operation and slash maintenance costs.

Equally important, it embodies new safety features . . . *extra* features that provide *extra* safety to the contractor or plant engineer.

Look at these major engineering advances . . . which bring you unprecedented savings, dependability and safety:

Center Busing doubles vertical bus capacity (from 300 to 600 amperes) . . . leaves top and bottom pull boxes free for wiring within and between sections . . . allows continuous main bus of 600 or 1200 ampere capacity up through five sections.

Expands with your plant requirements . . . Select only those standardized sections, control units and accessories which meet your present needs. Then, as your power consumption grows, you can easily expand to keep pace with your changing control requirements. Only minimum or "on-the-job" wiring is necessary.

Compare the DA7093 with other leading competitive Control Centers. Feature for feature, dollar for dollar, you get more with G.E.'s space-saver.

MOTOR CONTROL CENTER FEATURES	[illegible]	Mfg. A	Mfg. B	Mfg. C
Can accommodate 9 size 1 starter units with disconnect and transformer	[illegible]	No	No	No
Center Busing	[illegible]	No	No	No
Split Type "B" Terminal Blocks	[illegible]	No	No	No
Individual Stab Blocks	[illegible]	No	No	No
Individual bus insulators	[illegible]	No	No	No
Positive unit grounding	[illegible]	No	[illegible]	No
Straight-in wiring to main lugs accessible from front	[illegible]	No	No	No
No across hinge wiring	[illegible]	[illegible]	No	No
Edge to Edge Configuration Main bus	[illegible]	No	[illegible]	No
Minimum 4¾ x 6 inch wiring gutter	[illegible]	No	No	No
Unit Pull handle	[illegible]	[illegible]	No	No
Vertical Bus, minimum 5 inch spacing	[illegible]	No	No	No

CONTROL CENTER

50% in Floor Space

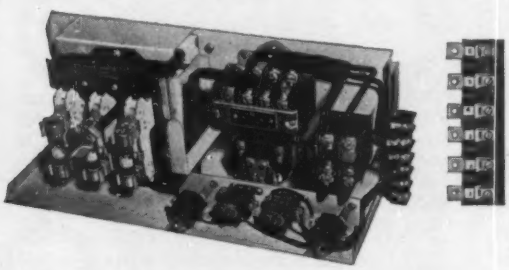
Split Type "B" Terminal Blocks allow you to add, switch or extract control units *without disturbing established wiring.*

Individual stab mountings cut your maintenance costs by as much as one-third because they can be replaced individually.

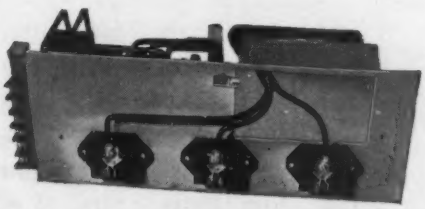
Positive grounding of each control unit *before* units engage bus bars. This, plus locking devices for both the control unit and operating handle, gives *added* protection.

Add a whole host of other design developments and you'll agree the DA7093 is designed for the future — *your* future.

For further details, please contact your nearest General Electric Apparatus Sales or Assemblies & Components Sales representative. Or write for Bulletin GEA-6160 — General Electric Co., Distribution Assemblies Department, Plainville, Connecticut.

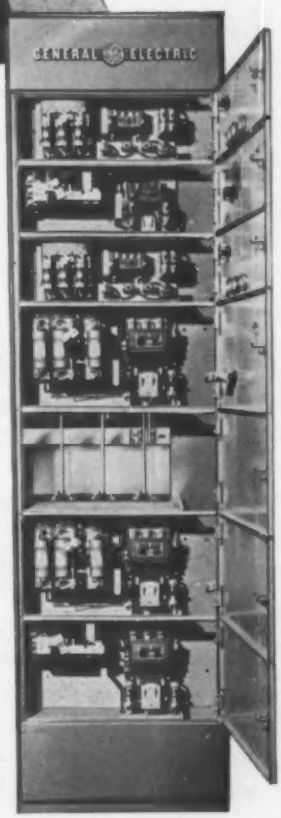


Control unit showing neat arrangement for easy maintenance. Type "B" Terminal Blocks (shown right) permit unit to be removed without disturbing wiring. Notice the fusible disconnect that can accommodate either or both Type NEC or Type CLF current limiting fuses.



Rear view of Control unit showing three individual bus stabs of silver-plated pure copper. Re-inforced with heat-treated spring steel, they assure positive contact with vertical bus.

Let a G-E motor control specialist show you how to conserve your motor control floor space. Let him help you select equipment for your specific requirements.



1. Center busing ups bus capacity from 300 to 600 amps . . . leaves top and bottom pull boxes free for wiring within and between sections. Result: more ampere capacity per dollar; quicker, easier installation.
2. Large wiring gutters (4¾" x 6"), plus wiring straps to keep wiring clear of units, simplify installation.
3. Removable cover plates for continuous center busing . . . hasten installation.
4. Doors that open past center so they won't hamper installation or maintenance work.
5. Disconnect handle takes three padlocks for *added* safety.
6. Pilot devices are mounted on control unit, thus eliminating across-the-hinge wiring . . . preclude frayed wiring with resulting short circuits.

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1011—Electrical Conduits

"Natural Electric Conduits" is the title of the 30-page Catalog No. 603 which describes and illustrates the many types of electrical conduits that are manufactured by National Electric Products Corp., 2 Gateway Center, Pittsburgh 22, Pa.

1015—Squeezon Connectors

The Squeezon, a new compression connector for power lines, is fully described in bulletin "SQ" available from the James R. Kearney Corp., 4236 Clayton Ave., St. Louis 10, Mo. The Squeezon features greatly increased electrical and mechanical efficiency.

1019—Service Panels

Information on protective electrical control centers for homes, apartment buildings, service stations, and industrial applications is contained in Bulletin PM-355, "BullDog Pushmatic Electric-Centers," issued by BullDog Electric Products Co., 7610 Jos Campau, Detroit, Mich.

1051—Transformers

"Care and Maintenance of Marcus Dry Type Transformers" manual No. M-100 goes into a complete description of the proper method of installing dry type transformers, particularly Class B, in all of the sizes which they are available today. Marcus Transformer Co., Inc., P. O. Box 551, Rahway, N. J.

1071—Plugs and Receptacles

Additional loose-leaf sheets for insertion in the Pylet Catalog 1100 are available from the Pyle-National Co., 1354 N. Kostner Ave., Chicago 51, Ill. These pages describe a wide range of plugs and receptacles for special purposes.

1079—Washer Lugs

Krueger and Hudepohl, 3 E. Third St., Cincinnati 2, Ohio, in their Bulletin 8-DF, give information and catalog listings for their complete line of K&H solderless terminal folding double cupped washer lugs. The folder explains uses and applications of all the lugs.

1081—Busduct Data

Various applications of the FA busduct for industrial purposes are illustrated in this bulletin made available by the Frank Adams Electric Co., P. O. Box 357, St. Louis, Mo.

1085—Lighting Fixtures

Eastern presents their most complete catalog, 32 pages of engineered lighting data, including a variety of fixtures for all architectural, commercial and industrial applications. Eastern Fixture Co., Inc., 170 Vernon St., Boston 20, Mass.

1087—Fittings Catalog

The M. & W. Electric Mfg. Co., Inc., East Palestine, Ohio, has available their new 28-page catalog 53, covering Service Entrance Mast Fittings, Service Entrance Cable Fittings, Ground Clamps, Rods, BX and Romex Connectors, Conduit Fittings, Wireholders, Insulator Supports and Cable Racks.

1097—Cord Catalog

A complete 48-page catalog is available from the Cornish Wire Co., 50 Church St., New York 7, N. Y. containing all data on flexible and portable cords, lamp cords, heater cords, cordsets, radio and electronic wires.

1099—Lighting Fixtures

Fluorescent and incandescent luminaires for schools, offices, stores and factories are illustrated in a series of bulletins issued by Curtis Lighting, Inc., 6134 West 65th St., Chicago 38, Ill. The entire series or any individual bulletins may be obtained upon request.

1103—Electrical Connectors

Burndy Industrial Catalog 52, featuring a complete line of general-purpose connectors for industrial wiring is available. Published by Burndy Engineering Co., Inc., Norwalk, Conn.

1107—RW and RHW Wire

"The Ampere Squeezer," a booklet explaining visually the effect of ambient temperatures on current carrying capacities of RW and RHW Wire. Simplex Wire & Cable Co., 79 Sidney St., Cambridge 39, Mass.

1109—Anchoring Devices

An illustrated 32-page catalog, No. 65, describing more than 35 anchoring and drilling devices for making fastenings to masonry, is available from the Arro Expansion Bolt Co., Marion, Ohio.

1115—Remote-Control Wiring

An eight-page, non-technical booklet on remote-control wiring, publication No. 16-330, written expressly for the consumer, is available from

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November, 1954

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SHUTLBRAK SWITCHES

Here's new switching convenience, flexibility and economy — both in cost and in operation — a switch that combines *both* interlocking and non-interlocking switch features in one unit.

Underwriter's Laboratories' approved, these new units embody all the features that made the Ⓕ Type SA Shutlbrak switch so popular, *plus* the added convenience and flexibility of quick, easy conversion to either interlocking or non-interlocking operation.

For motor control, service entrance or any job requiring a *standard duty* operating switch, these new units are ideal.

For additional information on these new, double-duty, low cost, safe, dependable switches, write for Bulletin No. 500 or consult your nearest Ⓕ representative listed in Sweet's. He'll be glad to discuss them with you.

Ⓕ SCSD SHUTLBRAK SWITCH HIGHLIGHTS

Quick-make and quick-break operation with interlock on full-opening cover. (Special release provided for access in "on" position by authorized person.)

Quick conversion to non-interlocking operation by manually shifting a simple mechanism inside the door — needs only a screw driver.

Ⓕ Kamklamp, pressure type fuseholders with solderless pressure connectors.

Rotary operating handle suitable for padlocking.

Positive "on" and "off" indication in cover.

CAPACITIES:

Type SCSD, 30 to 200 amps, 250 and 600 volts AC or DC 2, 3, and 4 poles, single throw.

Original design Ⓕ SAHD Shutlbrak Heavy Duty enclosed switches 30 to 1200 amps, also available.

Frank Adam Electric Co.

Box 357, Main P. O.—St. Louis 3, Mo.

Makers of:
BUSDUCT • PANELBOARDS • SWITCHBOARDS • SERVICE EQUIPMENT • SAFETY SWITCHES • LOAD CENTERS • QUIKHETER

the G.-E. Construction Materials Dept., Bridgeport 2, Conn. The booklet gives a picture story on the convenience, safety, and economy of this new wiring method.

1117—Air Cooled Fixtures

"Modern Air Cooled Fluorescent Fixture." Offering beauty, efficiency, and flexibility is provided by PEER LITE. New 8-page booklet for lighting specialist, giving complete engineering data and dimension is now available. Write Edwin F. Guth Co., 2615 Washington Blvd., St. Louis, Mo.

1131—Fluorescent Units

Fluorescent Units for Slimline Lamps. This new, illustrated, 20-page bulletin gives complete specifications of general purpose, "Magna-Flo" lighting systems for 96, 72 and 48-inch, T12 Slimline lamps. Write Benjamin Electric Mfg. Co., Des Plains, Ill., and ask for bulletin "mf."

1133—Vaportight Fixture

New Appleton "V-51" Series Convertible Vaportight Lighting Fixture is fully described and illustrated, for pendant, ceiling or bracket mounting, with or without reflectors and guards. Bulletin 5-A, 24 pages. Appleton Electric Co., 1701-59 Wellington Ave., Chicago 13, Ill.

1135—Wiring Devices

Catalog No. 51, containing complete electrical wiring device line of Leviton Mfg. Co., Brooklyn 22, N. Y., is a 96-page thoroughly illustrated one. Included are such features as the Kwik-change line, with wiring diagrams, a general index, and an index to catalog numbers.

1149—Insulator Catalog

Victor Insulators, Inc., Victor, N. Y., has available a complete catalog of Victor high, medium and low voltage insulators and line hardware. Complete contour shapes, dimensions, specifications and engineering data are included. Write for Bulletin No. 4 or use reply coupon.

1151—Circuit Breakers

A concise and well-illustrated 28-page catalog, No. C. B. 1000, on the new Stab-Lok Circuit Breaker System has been announced by Federal Electric Products Co., 50 Paris St., Newark 5, N. J. Advantages of the system comprise headings under which are listed complete specifications.

1153—Wiring Devices

A new catalog issued by Clyde W. Lint Co., 2323 West 18th St., Chicago 8, Ill., discusses details of the company's line of tools and electrical wiring devices, pole line hardware, and standard porcelain.

1155—Wire and Cable

Two catalogs—Bulletin RS-5, and Power and Control Cables, No. 24—available from Rome Cable Corp., Rome, N. Y. Power and Control Cables catalog is intended for utility, construction, and industrial engineering and purchasing personnel as a guide in selection of proper wire and cable types.

1157—Transformers

Dongan Electric Mfg. Co., 2998 Franklin, Detroit 7, Mich., has brochures available on its various types of transformers, including power circuit, control, signaling, machine tool, ignition and neon transformers.

1163—Connection Methods

A 20-page booklet illustrating practical and proved methods of making good connections with aluminum conductor, especially in distribution lines and service drops. Available in any quantity desired free of charge from Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, Calif.

1165—Ceiling Heating

"Sunwarm Electric Radiant Heating Cables." Complete information on ceiling radiant heating with Sunwarm radiant heating cables, including approved installation methods, available by writing Sunwarm, Inc., Box 263, Kingsport, Tenn.

1167—Industrial Lighting

A four-page catalog insert is now available from the Multi Electric Mfg. Co., Inc., 4223-43 West Lake St., Chicago 24, Ill. The leaflet describes Multi's line of lighting equipment and wiring devices, which include floodlights, vaporproof fixtures, and fluorescent and incandescent fixtures.

1169—Lighting Fixtures

Fluorescent and slimline luminaires, for schools, offices, stores, etc. Illustrated in the new catalog issued by Sta-Brite Fluorescent Mfg. Co., P. O. Box 6352, Miami, Fla., may be obtained upon request.

1175—Slimline Fixtures

The Light and Power Utilities Corp., 1035 Firestone Blvd., Memphis, Tenn., has recently issued a new catalog describing its line of fluorescent and slimline lighting fixtures. Typical installations of the fixtures are shown and discussed.

1177—Portable Furnaces

A new eight-page folder has been issued by Meier Electric and Machine Co., Inc., 3525 East Washington St., Indianapolis, Ind., giving descriptive information on the company's line of small electrical heating units. The booklet explains how the equipment may be used as primary or auxiliary heat.

1183—Electrical Equipment

The Wadsworth Electric Mfg. Co., Inc., Covington, Ky., has issued a new catalog Con 15-0 and Bulletin W. C. B. 53-1, containing data on their lines of Safety Switches, Service Equipment Distribution Panels and "E-Z-RED" Circuit Breakers.

1187—Fans and Blowers

Complete information on Peerless Electric Company's fans and blowers is available in illustrated Catalog SDA-160. Detail drawings, product specifications and rated capacities are included. The Peerless Electric Co., W. Market St., Warren, Ohio.

1189—Air Conditioners

Complete Line Folder—CL-54—covering Remington's "Tropic-Tested" line of both Window and Console Model Air Conditioners. Several exclusive features have been produced by Remington Air Conditioning Div., Auburn, N. Y.

1191—Control Centers

Colorful 24-page booklet by The Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio, describes advantages of Centralized electrical control systems through use of a-c Motor Control Centers. Typical installations, specifications and planning pits are featured.

1193—Cooling Equipment

Signal Electric Mfg. Co., Menominee, Mich., has recently issued its 1954 catalog which features the company's complete line of window, pedestal, desk, and oscillator fans. The new color book gives descriptions, features and specifications for each of the company's products.

1195—Kitchen Ventilation

Descriptive eight - page folder, Bulletin 620H, showing typical installations of all models in the Clipper line of ventilators is available from Trade-Wind Motorfans, Inc., 5725G S. Main St., Los Angeles 37, Calif. Folder includes dimensional drawings of installations helpful to building and electrical contractors.

1197—Convenience Outlets

Four-page bulletin gives complete information on the new P&S No. 500 for adding extra outlets to existing installations. Everything you need in a single package—no steel boxes required. Available from Pass & Seymour, Inc., Dept. ES, Syracuse 9, N. Y.

1199—Volt-ammeter Catalog

Amprobe Catalog No. 134 shows a complete line of snap-around volt-ammeters. Available from Pyramid Instrument Corp., Lynbrook, N. Y., the catalog includes detailed specifications and features of three high-voltage Amprobe Junior models for industrial use; four Amprobe Junior models for electricians and service men; new Amprobe Energizer.

1201—Loom Switch

Entirely new design fully described in an 8-page circular by The Arrow-Hart & Hegeman Electric Company, Hartford 6, Conn. Features fully enclosed, vibration-resistant mechanism; lint-proof enclosure; unusual compactness and dependability. Size 0, 2 hp to 600 volts a-c.

NEW! A FEATURE-PACKED LINE OF TYPE D SAFETY SWITCHES

FOR REAL ECONOMY and special advantages to you and the user, there is nothing like this new Federal Noark® line of Type D (Nema Type G) Safety Switches. The line includes 30, 60, 100, 200, 400, and 600 amp. sizes and each is available in both general purpose and raintight enclosures.

The styling of these new Type D's is smart and modern... the general design is uniform throughout, assuring identical high standards of quality and performance plus attractive appearance of completed installations. In addition, each of these switches embodies those features that have proved most desirable and practical during years of service in the field.

EASE OF INSTALLATION is provided by generous wiring gutters... solderless connectors... neutrals located for direct feed-through wiring... plenty of right-size knockouts.

NEW STANDARDS OF RELIABILITY are assured by big, husky, current-carrying parts... simple knife blade construction... new patented pressure-type fuse holder.

MAINTENANCE IS SIMPLE because all moving parts are readily visible... unit block construction on 60, 100 and 200 amp. switches simplifies maintenance ... 30 amp. switch blocks molded of new high- shock phenolic material... operating bar under the block of 30 amp. switch permits unobstructed access to fuses.

Order the new Federal Noark Type D Safety Switches from your distributor for new savings and efficiency. And write us for full information.

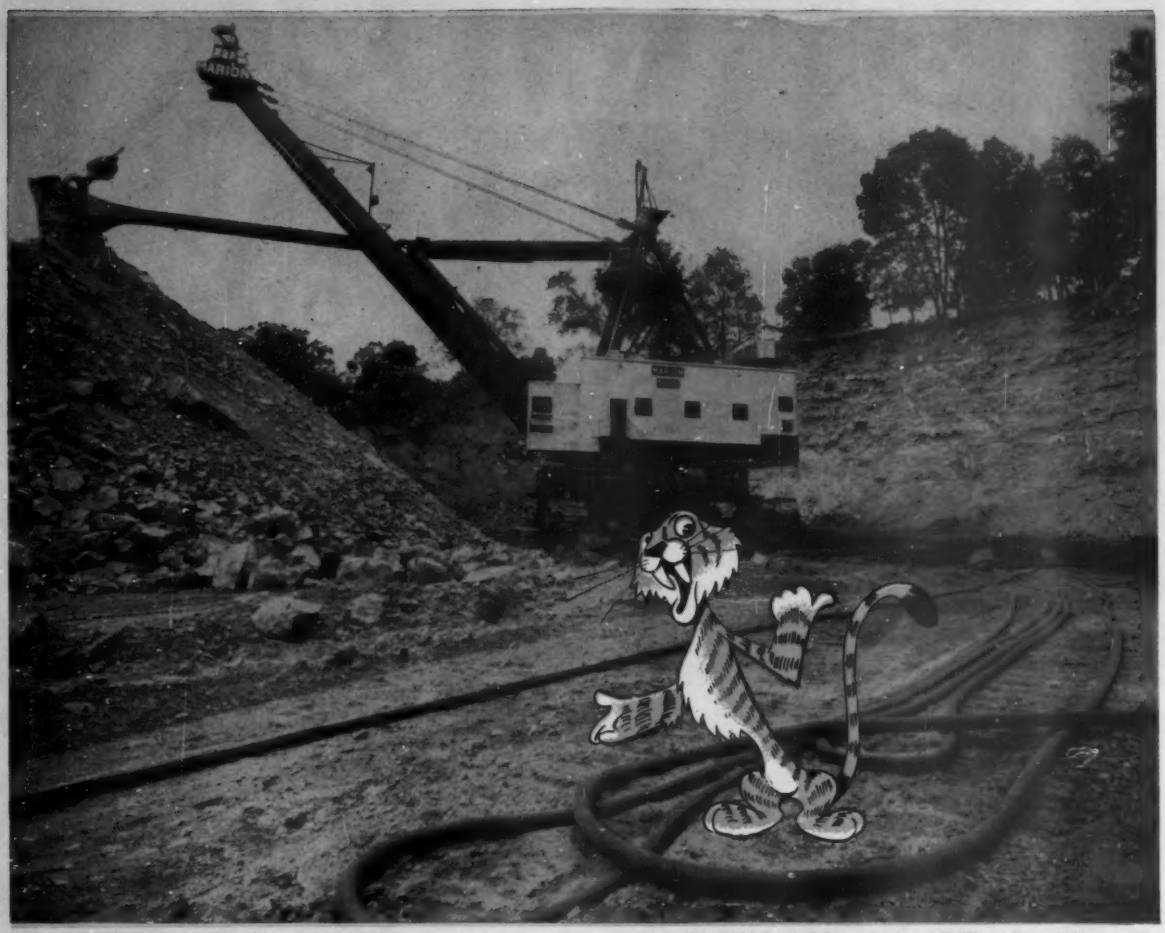
FEDERAL PACIFIC ELECTRIC CO.

FORMERLY— FEDERAL ELECTRIC PRODUCTS COMPANY AND PACIFIC ELECTRIC MANUFACTURING CORP.

Main Office: 50 PARIS STREET, NEWARK 1, N. J.

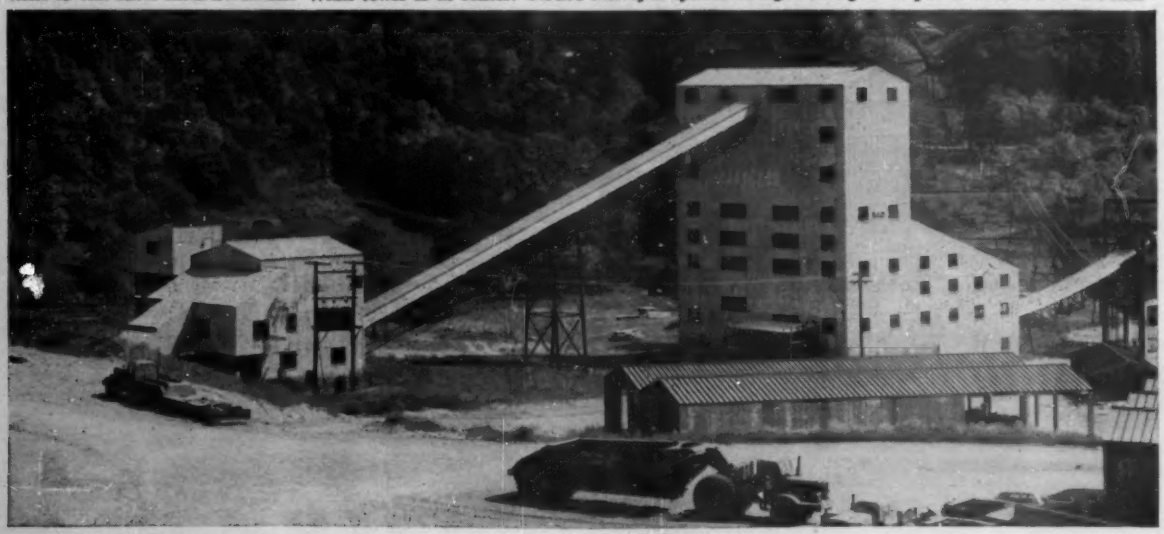
Federal Pacific products: Stab-lok Circuit Breakers, Motor Controls, Safety Switches, Service Equipment, Industrial Circuit Breakers, Panelboards, Switchboards, Control Centers, Bus Duct, High voltage circuit breakers and power switches ★ Sales offices in principal cities.

They needed a top quality cable



THE 10-CUBIC-YARD SHOVEL moves a lot of overburden in a hurry. It is supplied with 7500 feet of 3-conductor 1/0 Tiger Brand Amerclad.

HERE IS THE MINE HEADQUARTERS. Wash tower is at center. Notice conveyor system at right that goes to power station over the hill.



like *Tiger Brand* for this high production strip mine

HERE IS A PORTRAIT of the 45-cubic-yard shovel that has removed most of the overburden at this mine.

If you take a ride out near Zanesville, Ohio, someday, you'll spot the new Muskingum Mine—probably the most modern strip mine in the world. It supplies coal for the new 400,000 kw Muskingum River Plant of The Ohio Power Company, part of the American Gas and Electric System.

The big 18 and 45-cubic-yard electric power shovels operate day and night through sun, rain or snow. And when you consider the eye-popping cost of lost production time, it's easy to see why these shovels need the most dependable power cable on the market. At this mine, it's 100% Tiger Brand Amerclad.

The cable is always exposed to foul weather and accidental abuse. It often stretches for more than a *mile* from switchgear to shovel take-up reel. Yet, after more than 2 years on the job, the Tiger Brand Amerclad is in perfect condition without sign of wear.

If you need a cable that can *take it* . . . if you want cable for a power shovel, dredge, mine locomotive, welding machine or a heavy-duty electrical hand tool—you'll get more for your money if you specify Tiger Brand Amerclad. Drag it through puddles, over sharp rock; spill gasoline or oil on it and expose it to sun and ozone. Tiger Brand will still give you service you never thought possible. *Send the coupon.*

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

A STANDARD TIGER BRAND CABLE FOR EVERY SPECIAL JOB!

paper & varnished cambric cable	shovel & dredge cable
asbestos wire and cable	mold cured portable cord
aerial, underground & submarine cable	machine tool & building wire
	special purpose wire & cable

—SEND THE COUPON—

American Steel & Wire Division
Room CE-114, Rockefeller Building
Cleveland 13, Ohio

☐ Please give me more information about Amerclad.
☐ I'd like to talk to your representative.

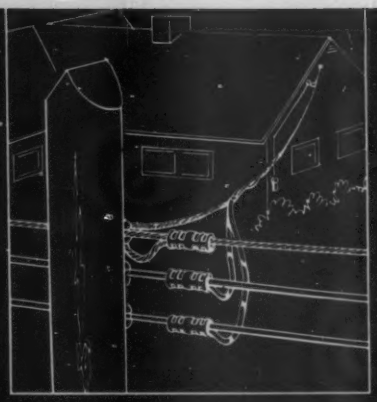
Name .....
Firm .....
Address .....
City ..... State .....

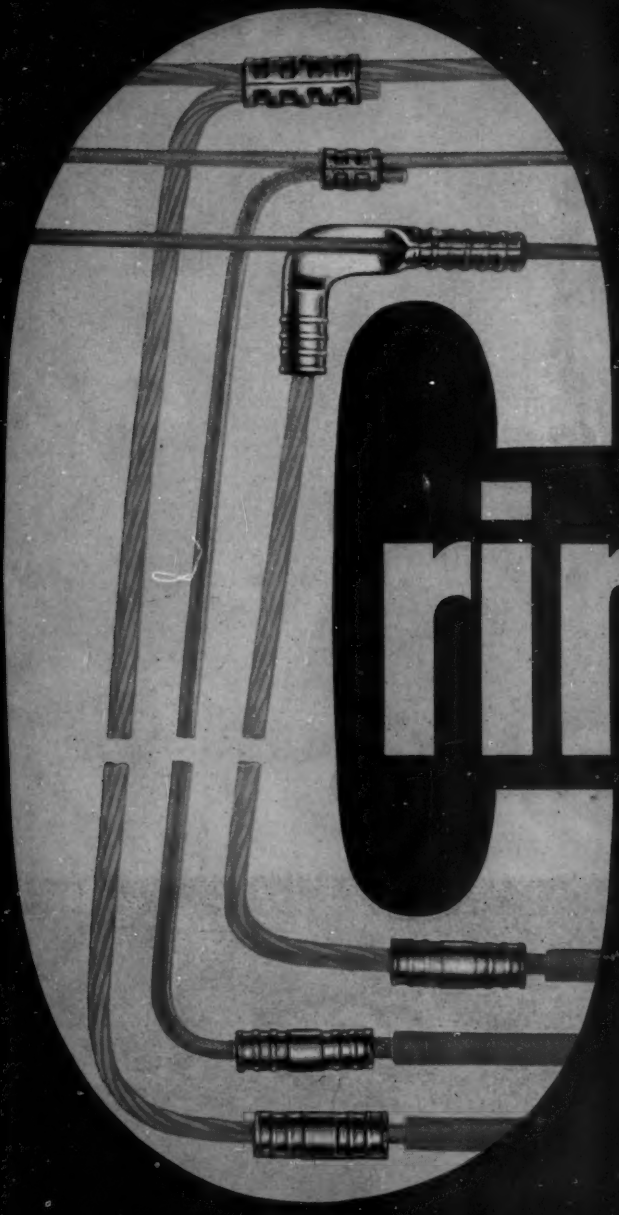
USS Tiger Brand — **ELECTRICAL WIRE & CABLE**

USS

UNITED STATES STEEL

from pole to house entrance...





Crimpit

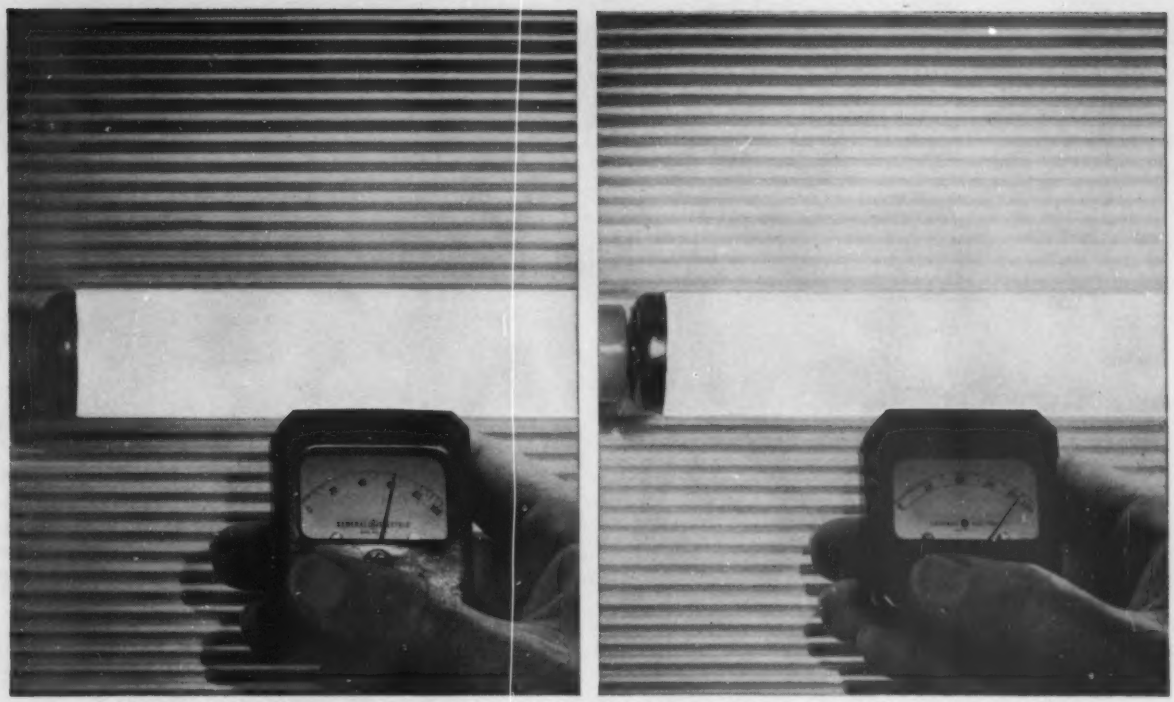
COMPRESSION CONNECTIONS

Simplified hand or hydraulic installation tooling insures fast, fool-proof, economical connections with minimum investment in tools and dies. Write for Bulletin CR.

BURNDY

54-16

NORWALK, CONNECT. — TORONTO, CANADA • *Factories:* NEW YORK, CALIF., TORONTO • *Export:* PHILIPS EXPORT COMPANY



Regular slimline, left, gives 620 units of light. New High Output Rapid Start lamp, right, gives 840 units of light.

NEW GENERAL ELECTRIC FLUORESCENT LAMP GIVES ⅓ MORE LIGHT THAN ANY PREVIOUS FLUORESCENT

LIGHTS ALMOST INSTANTLY—General Electric announces the most important advance in fluorescent lighting in 10 years: the new High Output Rapid Start fluorescent lamp. The 96-inch High Output lamp gives 36% more light than the most powerful G-E fluorescent lamp previously available.

For new installations, General Electric High Output lamps offer this ⅓ bonus of light without increasing the number of fixtures or maintenance costs.

This big increase in light, with no increase in lamp size, has been achieved through a special cathode developed by General Electric which permits a boost in lamp wattage to 100. Because the cathode is of the famous General Electric triple coil design, these Rapid Start lamps light up almost instantly. General Electric High Output lamps have a rated life of 7,500 hours, the same as all General Electric general lighting fluorescent lamps.

A new G-E base and socket design protects the lamp contacts by recessing them. A simple push-pull sets the lamp in its fixtures.

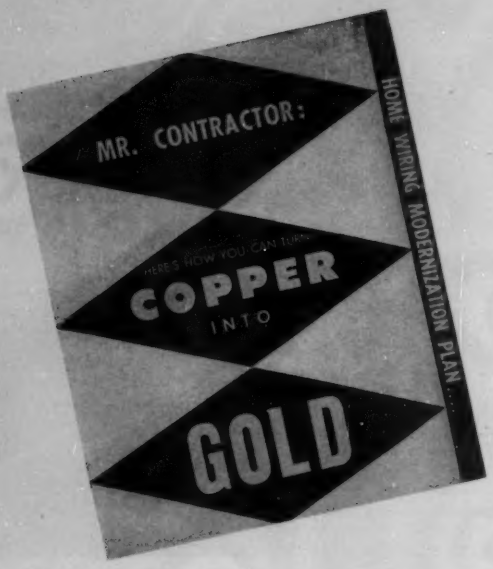
HAS VARIETY OF USES

The new General Electric High Output fluorescent lamp is especially suited for use in areas with high ceilings, in factories, warehouses, offices and stores. Also in store windows, showcases and other places where you want higher lighting levels in keeping with the modern trend. New fixtures designed for the G-E High Output lamp will soon be available from a number of lighting fixture manufacturers.

For information, write to Lamp Division, General Electric Company, Dept. 166-ES-11, Nela Park, Cleveland 12, O.

Progress Is Our Most Important Product

GENERAL ELECTRIC



Kansas City's

◆ UTILIZING THE THEME "Mr. Contractor, Here's How You Can Turn Copper Into Gold," the Electrical Association of Kansas City recently launched a year-long home wiring modernization plan for homeowners. A financing arrangement, with minimum standards and requirements, whereby the customer may have wiring modernization done on the installment plan, payable each month with the electric service bill, with a minimum of $5 per month, and up to 36 months to pay, are among the outstanding features of the plan.

Co-operative endeavor

Details of the year-long program were released through John S. McDermott, executive manager of the Electric Association of Kansas City, by K. G. Gillespie, vice-president and general manager of Jenkins Music Co., Kansas City, and president of the Association.

Co-operating in the Electric Association program are the supply and appliance wholesalers, Kansas City Chapter of the National Electrical Contractors Association, and the Kansas City Power & Light Co.

Minimum standards and requirements must be met in making the wiring modernization in each home, and the plan shall meet the National Electrical Code standards, as well as specific local requirements.

Minimums sought

Included in the minimum requirements are:

1. Installing 3 conductor No. 2 type RH or 2 No. 2 and 1 No. 4 in 1¼ inch conduit service entrance (outside to inside connectors). Outside of Kansas City, Missouri, can use service entrance cable of at least 2 No. 2 RH and 1 No. 4.
2. Moving meter outside.
3. Installing 100-ampere capacity service entrance cabinet with 12 circuit breaker positions. Breakers for six appliance and lighting circuits, and a future range circuit must be included.
4. Reconnecting and balancing existing circuit wires within new service entrance cabinet.
5. Installing adequate ground to street side of water service pipe.
6. Installing two 20-ampere circuits on separate breakers: one in kitchen, one in laundry.
7. Use No. 12 wire in circuits for all other appliances of 115 volt capacity.
8. Urge use of No. 12 wire for general lighting circuits.
9. Urge use of proper and up to date lighting fixtures.

Although these are the minimum requirements under the financing plan, the program also outlines additional recommended installations that are highly desirable, and all participating contractors are being asked to review these recommendations with each customer. These include an additional 8 breaker panel or one 20 breaker panel to accommodate the following when needed:

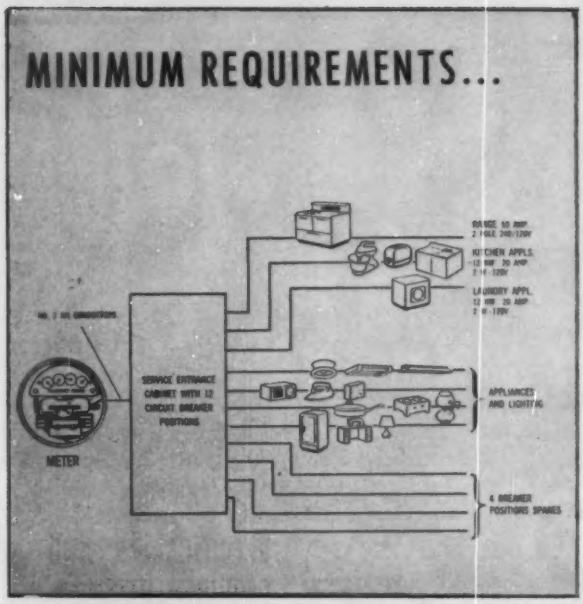
Water heater, 20-ampere circuit.
Clothes dryer, 30-ampere circuit.
Home freezer, 20-ampere circuit.
Room cooler (115 volts), 20-ampere circuit.
Furnace control, 20-ampere circuit.
Dishwasher and waste disposer, 20-ampere circuit.
Air cooling unit (220 volts), 20-ampere circuit.

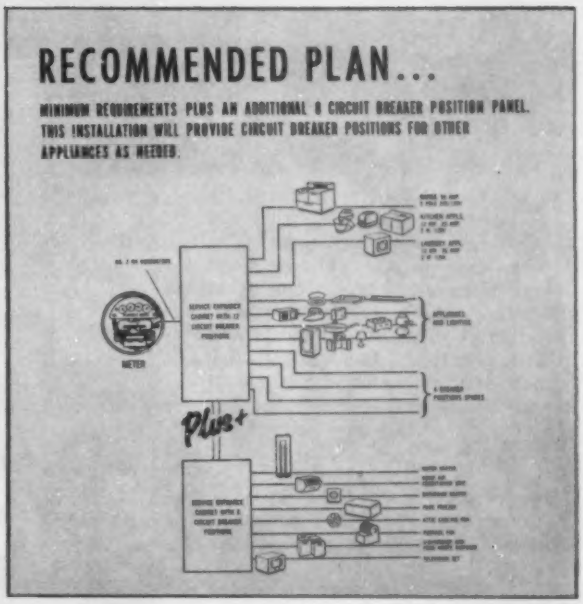
Financing of the program is being handled through the local offices of First Bancredit Corporation, who will process all the necessary forms. Kansas City Power & Light will inspect and certify the jobs, and the homeowner will receive a wiring modernization certificate to file with other valuable papers. Upon completion of the inspection, First Bancredit Corporation pays the contractor the amount financed with no recourse.

Budget for program

A $40,000 budget is being utilized in the advertising and promotion of this program, including sizable newspaper ads and numerous full-minute radio and television spot announcements. An advertisement will be used in the *Kansas City Star* every Sunday from now until September 1, 1955, and five radio stations and three television stations are being utiliz-

wiring modernization plan


MINIMUM REQUIREMENTS...
RANGE 50 AMP 2 POLE 240/120V
KITCHEN APPLS. 12 NW 30 AMP 2 #4 - 120V
LAUNDRY APPL. 12 NW 20 AMP 2 #6 - 120V
NO. 2 #6 GROUNDED
SERVICE ENTRANCE CABINET WITH 12 CIRCUIT BREAKER POSITIONS
METER
APPLIANCES AND LIGHTING
4 BREAKER POSITIONS SPARES


RECOMMENDED PLAN...
MINIMUM REQUIREMENTS PLUS AN ADDITIONAL 8 CIRCUIT BREAKER POSITION PANEL. THIS INSTALLATION WILL PROVIDE CIRCUIT BREAKER POSITIONS FOR OTHER APPLIANCES AS NEEDED.
METER
Plus+

Specifications and requirements are given in simplified diagrams in the sales kit furnished to those participating in the Kansas City wiring modernization program. The "recommended plan" diagrams are shown here.

ed for one minute announcements. More than 575 of these spots have been purchased, and will be used between now and next September 1.

Materials furnished

All of the program's advertising and promotion material is geared to get the homeowner interested to the point that he or she will write, phone or call in person to get the Association's two brochures, with return postal card. These post cards are turned over to Kansas City electrical contractors on a rotating basis; contractors call on the homeowner, give an estimate of the cost of the job and do the selling themselves.

Sales tools, financing forms, and other details are being provided to all participants by the Electric Association. In addition, a three-man steering committee has been formed to handle the promotional campaign, representing the utility, the contractors, and the Electric Association.

The Association feels that the campaign has all the elements for great success, since they estimate more than 90 per cent of the present homes in Kansas City are prospects right now for new wiring jobs. And, they believe that electrical contractors taking full advantage of this well co-ordinated promotion can acquire the King Midas touch by turning copper wiring into a gold mine of extra dividends by selling a bigger service entrance, more branch circuits and more outlets for every possible job. Kansas City contractors have been urged to call the Wiring Modernization Program to the attention of their customers every time they are called in to repair an appliance or replace a fuse.

Everyone in the electric business in Kansas City stands to profit from this campaign—contractors from extra wiring business; appliance dealers from the extra power and circuits available in homes; the utility from increased loads, and, of course, the suppliers and wholesalers in the field. Triple-barreled promotions such as this could be a great help to other cities in the South and Southwest, the Association feels.

Dust-tight electrical equipment protects new grain elevator

◆ ONE IMPORTANT feature of Corpus Christi's new $4,390,000 public grain elevator with a capacity of over two million tons, constructed recently by Nueces County Navigation District No. 1, is the extensive system of dust-tight enclosures that protect electrical equipment from flash fires. On every level of the 217-foot head house is a control port made up of dust-tight motor starters, circuit breakers, plug-receptacles, and lighting fixtures. In addition, condulet fittings instead of conduit bends interconnect rigid conduit wherever possible throughout the new grainery.

System of bins

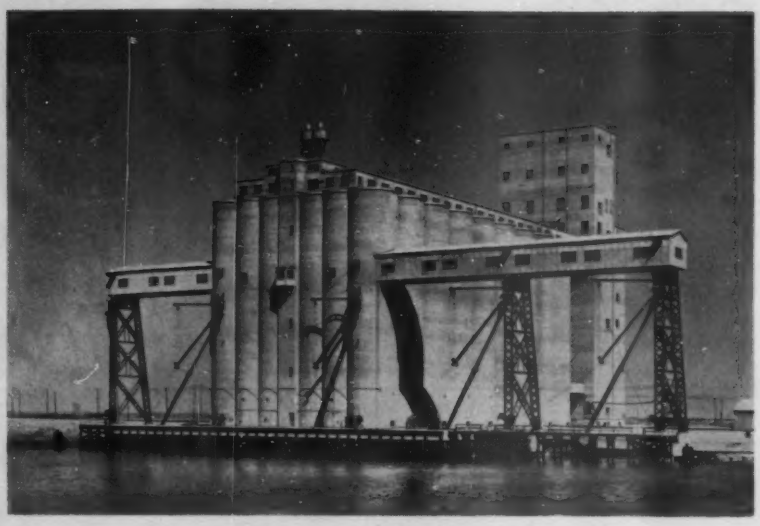
Constructed of reinforced concrete, the elevator has 36 circular bins and 28 interstice bins. The bins are 132 feet high and cover 22,672 square feet of ground area. Grain is conveyed by belt to and from the bins at the rate of 50,000 bushels per hour. The elevator's railroad storage yard accommodates 240 cars.

For shiploading, five loading spouts, supplied from two conveyor belts and six garner bins, supplies grain to a ship at the rate of 125,000 bushels for the first hour, 75,000 bushels for the second and third hours, 50,000 bushels per hour thereafter. Finally, the elevator is fitted with a thermometer system to check grain temperatures in the bins, and a complete dust control system that extends into all accessible working areas of the storage unit and head house.

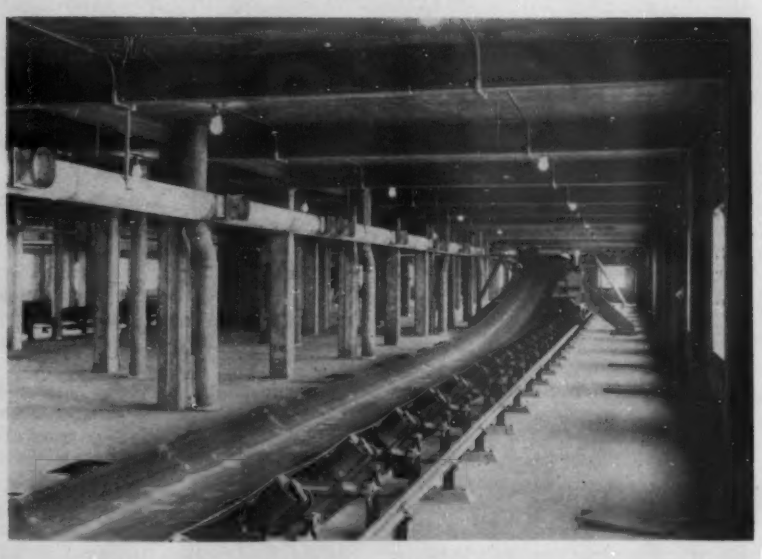
Insulation qualities

Electrical equipment at Corpus Christi is dust-tight for two reasons: (1) most electrical components generate heat and (2) arcs or

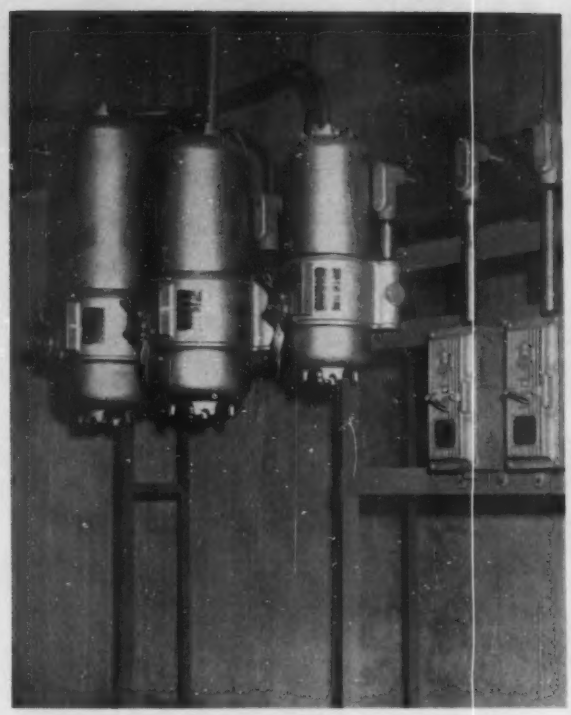
(*Continued on page 22*)



Bayside view of the South's newest grain elevator.

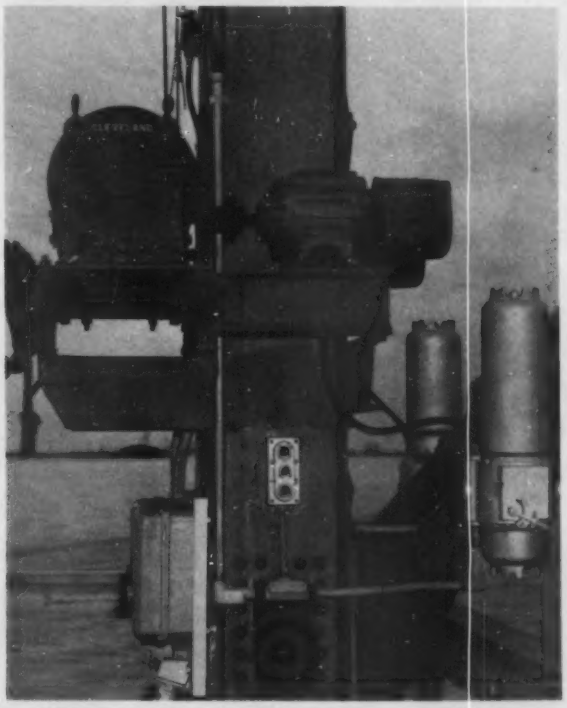


View of the distribution floor from the head house. Conveyor belt funnels grain to whichever elevator is desired. Crouse-Hinds dust-tight lighting fixtures (type DLA) line the conveyor aisleways and dust-tight receptacles are installed along the right wall. Forming neat elbows, Obround condulets saddle the concrete beams.

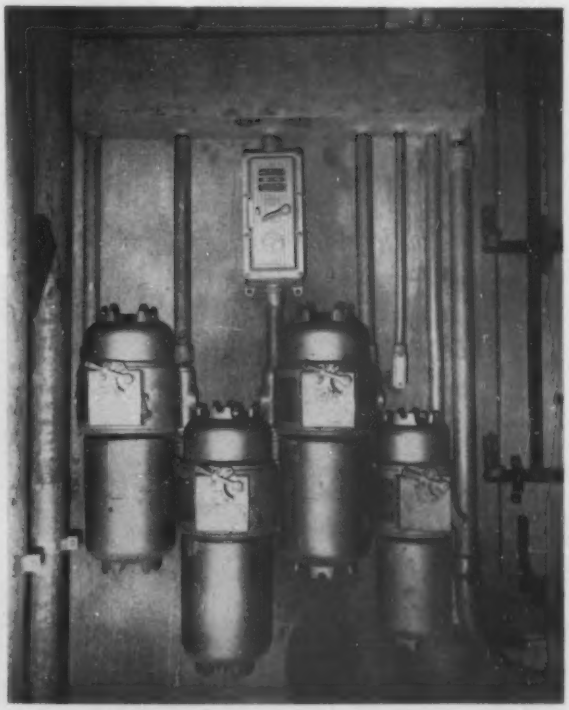


Control panel above shiploading docks has three EPC motor starters and three DVS circuit breakers. The motor starters control dock distribution motors and the circuit breakers, the lighting.

Main floor of head house. Type DLA fixture is suspended below a seal, which keeps dust from accumulating in conduit stem. Fixture is cone-shaped to prevent settling of enough dust to cause overheating.



Winch and controllers used to raise shiploading spouts. Type EPC dust-tight condulets, reversible starters and circuit breakers, are controlled by push-button on I-beam. Sealtight conduit connects controllers and motors.

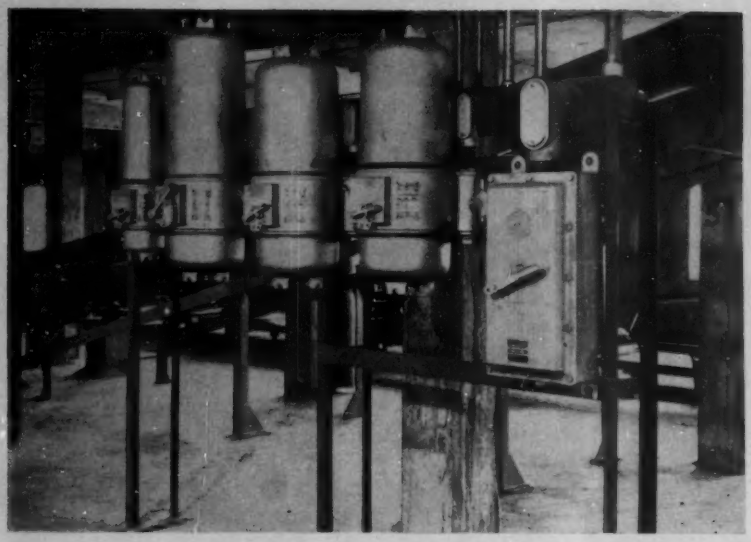


Dust-tight motor control panel located next to elevator drier room. Note ingenious feed system, used to conserve space. Type EPC condulets are staggered so lower housing hubs feed directly into upper housing hubs.

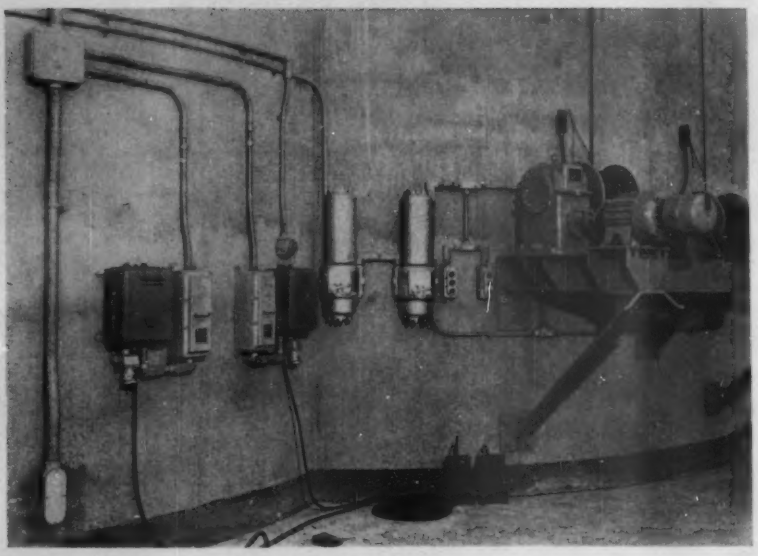
(*Continued from page* 20)
sparks from electrical equipment ignite dust particles in the air.

For these reasons, dust-tight electrical components have tightly gasketed housings shaped to dissipate heat at a higher rate than ordinary electrical components. Dust cannot enter dust-tight equipment and, although it can collect amply on the equipment's external surfaces, its insulating effects are safely minimized by the equipment's capacity to disperse heat quickly.

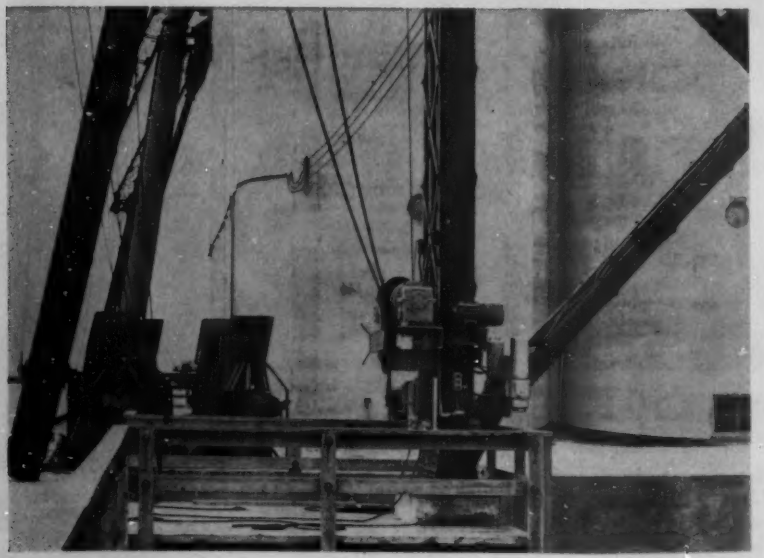
The new structure is the first public elevator built at tide-water on the Texas Gulf Coast in 20 years.



Main control panel for the conveyor system and lighting on the distribution floor consists of four EPC motor starters, one DVS circuit breaker for main feeder protection.



Winch control station mounted on elevator bin bulkheads. New Corpus Christi grain elevator has two stations mounted in this manner. They control the lifting and lowering of loadspouts that are also mounted on elevator bulkheads directly overhead.



Motors on small hoppers (left center of photo), which are placed in ship's hold during loading, are equipped with RS box and receptacle. To energize hopper motors, inverted plug on extension cord connects motor receptacle to receptacle of special controller on I-beam.

Typical of the homes built by Mr. Ellis in the Clifton Bluff subdivision, this home is one of the 20 which sold easily because of its all-electric nature and adequate wiring.

One feature of the Clifton Bluff homes is their adequate outside lighting. A minimum of four lights were used for illumination of the garages, front entrances, and Florida patios.

by C. E. Wright

One Florida residential developer has found that it's easy to sell

All-electric homes

◆ TWENTY ALL-ELECTRIC homes built in Clifton Bluff, a suburb of Jacksonville, Fla., in the $25,000-$35,000 price range, were sold within 90 days, partly because of their electrical features. This is one of the first subdivisions in the Southeast to be completely equipped with heat pumps, most others having used oil heat. It is also one of the first all-electric subdivisions in the country. The designer, J. Brooks Haas, of Jacksonville, had become thoroughly sold on heat pumps for the Florida climate as a result of an installation in his own office.

Developer of Clifton Bluff is Foster H. Ellis, who has built several hundred homes in the Jacksonville area since he started operations there in 1929 following earlier experience in Indiana. Over the years he has become more and more convinced that speculative houses sell faster if they are adequately wired. In the Clifton Bluff homes the National Code was exceeded by about 50 per cent in the number of outlets. "A prospect looks at the number of plugs and says, 'This is what I want'," says Mr. Ellis. The heat pump installations were also selling factors.

In previous construction, Mr. Ellis had used Ceil electric heat in some instances, but this was his first experience with heat pumps for year-around air conditioning. The duct work was designed by Burt J. Saymon, professional engineer. Electrical work was done by the Gross Electric Co., Jacksonville. Each home has its own shallow well for supplying water to the heat pumps, which were installed by W. W. McMillan & Co., Jacksonville.

The first buyer of a Clifton Bluff home was John K. Ferguson, vice-

(*Continued on page* 81)

Keeping track of tools

by Baron Creager

◆ AT A COST of approximately $30 the A-Bright Electric Co., of Dallas, Texas, installed a system that keeps track of all the company's tools.

There are no records on company tool losses previous to installation of the system, so there are no figures on the number and value of tools saved since. But there are no longer any unexplainable losses of tools and equipment, such as aluminum extension ladders.

Tools that have actually been stolen from a company job have been recovered as a result of this system. And because the company has dates and circumstances, there is 100 per cent coverage on income tax returns when tools are stolen. The system definitely establishes what has been lost — or has disappeared — and when and from what job.

Materials used

The company is owned and operated by A. R. Abright, Sr., A. R. (Reese) Abright, Jr., and W. F. Abright, father and sons, but the inexpensive "tool-tracker" was conceived and installed by P. M. (Pat) O'Reilly, warehouse manager.

Materials utilized in the A-Bright system consisted of one sheet of 4 by 8 plywood, metal tags and dime-store cup hooks in abundance, a dozen or so name plate frames and two metal stamping kits, such as are available from hardware stores — one for letters of the alphabet and one for numerals.

O'Reilly says the board as it appeared at the time the accompanying picture was made contained 612 tags with room for 350 more. Some of the tags in the picture appear to be darker than others, but this is an illusion produced by positions of some tags on the cup hooks.

Actually, one colored tag — yellow — is used. When the board was laid out, more hooks were provided for some categories of tools, such as pipe benders, than there were benders. This was done to allow room for expansion of the tool inventory in that category, without scattering the category all over the board. Where such unused hooks are available they are identified by yellow tags, yellow being achieved by a paint-dipping process.

Identification on tags

The tags are metal, aluminum being used exclusively by Mr. O'Reilly now. He began by using steel tags, but aluminum is much easier to stamp.

"You will notice that the board is laid out in rows of tags both up and down and across," Mr. O'Reilly pointed out. "Each row of tags is identified horizontally by a letter of the alphabet and each vertical row of tags is identified by a number." (Numbers in this case are penciled and do not show in the picture.)

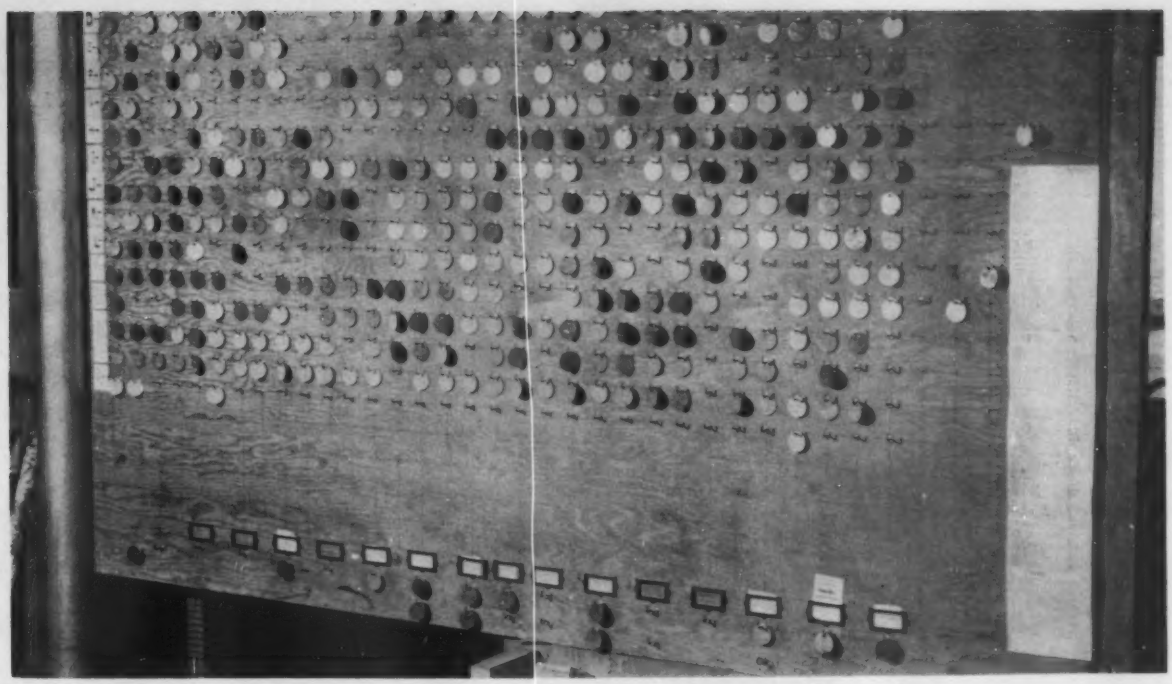
"Each tag is identified on one side," he continued, "with the name of a tool, a beam punch, for illustration. On the reverse side the tag bears the letter 'J' and the numeral '2.' This, of course, means that the tag hangs in the 'J' row, horizontally, and the '2' row vertically. It isn't necessary to mark or otherwise identify the tools themselves with corresponding letters and numbers. For, if you had six beam punches, for example, you'd have six tags."

Job classification

When electricians go out on a job they requisition materials and tools and these are signed out to them in the usual manner, Mr. O'Reilly explained. But — when the tools leave the tool room (enclosed with hardware cloth), the list of all tools signed out for any one job is taken to the tag board. From this list, tags corresponding with the tools checked out are removed from their appointed hooks.

"At the bottom of the board," Mr. O'Reilly continued, "there is a row of name plate frames into which we slip the identity of a job. And under the name of the job we hang all the tags for tools out on that job. Sometimes it takes two hooks, as can be seen from the picture.

"Then when the job is finished the electricians check in their surplus material — and their tools. If we don't have a tool for every tag hanging under the name of that job, we know something has happened to it. Often we can send a truck driver back to a job, and he will find a missing tool, overlooked when our men left the job. If we can't find it, and nobody knows what happened to it, we are satis-



On this A-Bright Electric Company tool tracker board, 612 tags keep account of the company's tools. Room is left for 350 more tags if tools are added. Long list at right is the index list which assists in tagging.

fied it has been stolen. Even stolen tools are sometimes recovered, mainly because we know as soon as the job is finished what tools are missing.

"Once our men checked in off a job, and we were short an aluminum extension ladder — something very much in demand. We couldn't find the ladder on the job, and we were pretty sure it had been stolen because there was another trade on the job that could use such a ladder. So we drove by this fellow's house and sure enough, there was our ladder, on his truck. We didn't do anything except claim our ladder. Through this system we have recovered aluminum extension ladders ten or twelve times, mostly when they were merely forgotten on the job. At $75 each for such ladders, the system is worth while."

Also necessary for operation of the tool board is an index, shown at the lower right of the board in the picture. This index lists the tools, designates the hooks reserved for the corresponding tags and serves as a guide in taking down or replacing the tags.

Warehouse manager Pat O'Reilly (center) conceived the idea and installed the tool tracker system. With him are A. R. Abright, Sr. (right) and A. R. (Reese) Abright, Jr. On the desk is stamping kit used to stamp tags.

Valuable to company

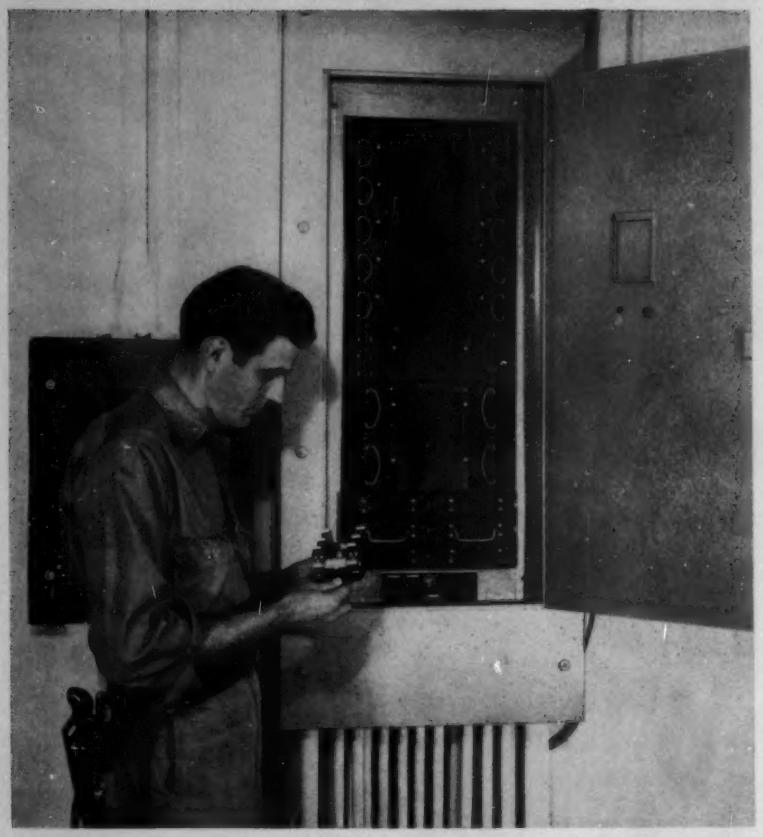
Another valuable feature of the tool-tracker is that at the conclusion of a job it refreshes the memory on materials checked out for the job and possible surpluses not returned to the shop, according to Pat O'Reilly.

"This system was started two years ago," he added, "because, although large tools cause little trouble, a number of tools and such equipment as ladders were always being misplaced, lost, or stolen, especially with a number of jobs going at once.

"If stolen, we had no way of knowing and couldn't charge the loss off in tax reports. Of course, the system can't prevent theft, but now we know when a tool has been stolen."

Electrical distribution for the small

by George A. Etzweiler
Engineer, Ahrendt Instrument Co.
College Park, Md.



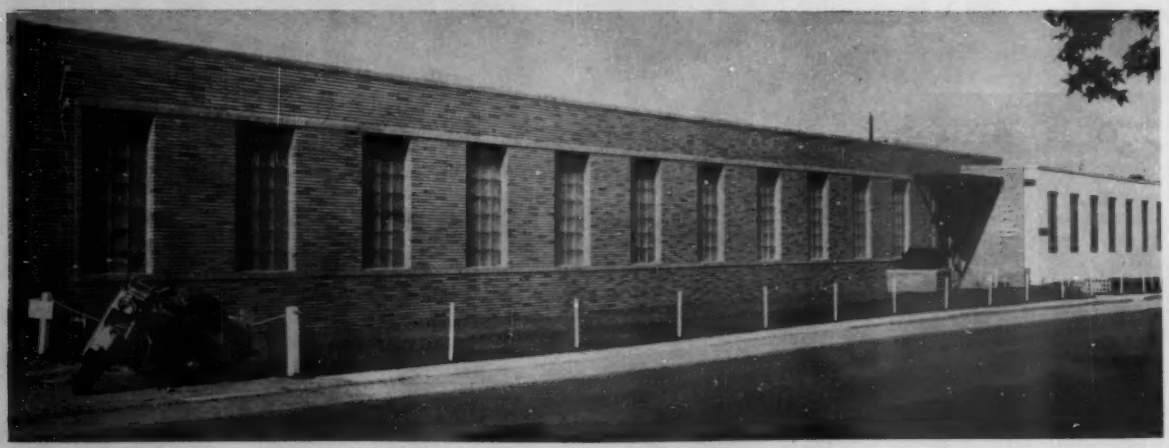
The 60-inch panel can be equipped with twenty-four 30-amp, sixteen 60-amp, or twelve 100-amp three-phase circuits and is used to feed an area of 3,000 square feet of the Ahrendt Instrument Company building.

◆ THE SMALL MANUFACTURING company starting out has problems in planning its electrical distribution that are unique to the individual plant of small size. Limited capital may preclude long range planning for growth and for an electrical system better suited to the larger plant.

Necessary economy at the outset may mean the installation of a system with less flexibility and less convenience. However, a system of lower initial installation costs may prove adaptable to slow steady expansion and more than equal to the needs put upon it for years to come. At the same time maintenance costs may be economical and maintenance itself may present no difficulties. This has proved to be the case with The Ahrendt Instrument Co.

Underfloor system

As a newcomer to the field of precision instrument manufacture five years ago, we at The Ahrendt Instrument Company adopted an underfloor electrical distribution system to the precision machine shop and assembly areas in our



The Ahrendt Instrument Co., of College Park, Md., now occupies this modern one-floor building. The manufacturer of precision instruments has expanded from 2,400 square feet to 33,000 square feet during last five years.

In this section of the machine shop of the Ahrendt company, the area above the machines is clear of pipes and wires. An underfloor electrical distribution system is used, making an eye-appealing shop.

40-foot x 60-foot one-floor building. This system was adopted because we felt that it provided the most flexible permanent distribution per investment dollar: The underfloor system adopted consists of a 3/4-inch E.M.T. line feeding a cast iron floor box from a local distribution panel.

Three 3/4-inch E.M.T. lines, each ended with a 3/4-inch threaded conduit sleeve, are extended from this floor box. These three lines are bent to locate the threaded sleeve (which is plugged) vertical and flush with the concrete floor about 4½ feet from the floor box. (This is shown in the accompanying sketch.) With this arrangement a machine or bench can be connected at any one of four locations to each circuit conduit from the load center; at one of the three 3/4-inch stubs or at the floor box itself. Eight floor boxes, providing 32 points of connection were placed in each 20-foot x 60-foot section of floor. A machine with a motor up to 10 hp in size can be connected to any one of the circuits from our 208/120-volt 3-phase 4-wire distribution system.

System advantages

This layout has kept the area above the machines clear of pipes and wires and has certainly made for a more eye-appealing shop. At the same time an underfloor system is much lower in initial costs than its alternate, an overhead busway system. Moreover, during major changes when we expanded from our original 2400 square feet to our present 33,000 square feet of floor space, we turned our machine shop area into an assembly bench area and back again, and found our underfloor system readily flexible for connection of our precision jig bores, lathes, gear cutting equipment, milling machines, grinders, turret lathes and other machines. Also some of the original machine shop area has been turned into office area with the underfloor conduits being utilized for electricity and communications.

Our underfloor conduit system is fed from a pullout fuse block type local distribution panel. A 60-inch panel, is used to feed an area of 3,000 sq. ft. This panel can be equipped with twenty-four 30 amp., sixteen 60 amp., or twelve 100 amp. 3-phase circuits.

These fuse blocks are readily exchangeable, which provides a great deal of flexibility for machines up to 10 hp. By standardizing on this type of panel, our stock of spare parts has been reduced. A damaged fuse block can be replaced by a spare block from some other panel.

Providing for additions

A 200-amp 208/120-volt 3-phase 4-wire service was installed in our first 2,400 square-foot section of building. This capacity, while finally somewhat inadequate, served our needs for two building additions of 2,400 square feet each in the following two years. During our next building addition, a year later, this time an addition of 8,000 square feet, we enlarged the service entrance equipment to 1,200 amp.

Our service equipment now consists of the 1,200-amp, 208/120-volt 3-phase 4-wire current transformer type disconnect switch feeding a 12-foot trough to which are connected the various feeder disconnect switches. This service equipment is now fully loaded but still adequate for the operation of our machine shop, sheet metal shop, assembly area, welding shop, plating facilities, administration and engineering offices, and overall plant air conditioning in both our previous building and our most recent addition of 18,000 square feet. All of our present 33,000 square feet of building is of fire-

(*Continued on page 79*)

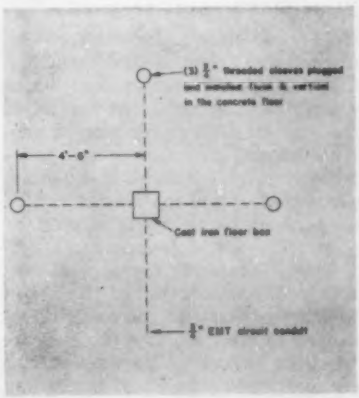


Diagram of the ¾-inch E. M. T. lines showing the use of conduit sleeves which are plugged to the floor box.

New outage monitor utilizes carrier

◆ A NEW OUTAGE monitor which can be used to monitor breakers at unattended substations, on transmission lines, feeders or distribution circuits has been developed.

The novel feature of this device, known as the Sprague Moduline Outage Monitor, is its use of only one power line carrier frequency to simultaneously monitor as many as fifty remotely located points on a power system. To do the same job with conventional carrier supervisory control equipment would require fifty discrete carrier frequencies.

One transmitter used

This economy of carrier frequencies is accomplished by utilizing one carrier transmitter which distributes unmodulated carrier to the supervised system from a central location. The carrier is remotely modulated by audio frequencies generated at the monitored points, each point being distinguished by a discrete audio frequency.

The modulated carrier is then received and detected at the monitoring location and the audio tones separated and utilized to indicate whether or not the monitored equipment is in normal operation.

Figure 1 illustrates the method by which remote modulation of the carrier can be accomplished. If a carrier generator E is connected to the sending end of transmission line AB and a tuned LC circuit connected from line to ground at point B, a low impedance from line to ground will result. The generator will see a given impedance Z which will result in a voltage E at its output terminals.

If a variable resistor R parallels the inductance, changing the value of R results in a change in equivalent Q of the LC circuit and produces a variation in Z and E. If R is varied at a given audio frequency rate, Z and therefore E will also vary at the same audio frequency resulting in a modulated carrier on transmission line AB.

In the Sprague Moduline Monitor the remote modulation takes place at the monitored points by means of a circuit similar to that of Figure 1 with the variable resistor R replaced by a diode whose internal impedance is varied at an audio frequency. A simplified diagram of the remote modulator appears in Figure 2.

Dual capacitor function

Here C is utilized both as the high voltage coupling capacitor and the capacitive portion of the LC circuit. The circuit is resonated to the carrier frequency by tuning the inductance L. G is an audio oscillator circuit accurately controlled by a vibrating reed and the audio signal is impressed on the diode V through the audio transformer T. The variable resistor in the ground leg of the transformer secondary produces a bias to prevent distortion of the carrier modulation. By means of this circuit a modulated carrier is produced on the line.

When the monitored system is a radial distribution or transmission system, the remote modulators can be placed on the load side of the monitored breakers or fuses. Sixty cycle operating power for the modulator is taken from the line.

As long as the sectionalizing device remains closed the modulator is in operation, and its audio frequency is received at the monitoring location and utilized to hold in a relay giving visual indication by means of a red light, of normal operation.

When the sectionalizing device opens, operating power to the modulator fails, the audio modulation from that modulator no longer is picked up at the monitoring receiver and the relay for that channel drops out, resulting in an audible buzzer alarm and a visible

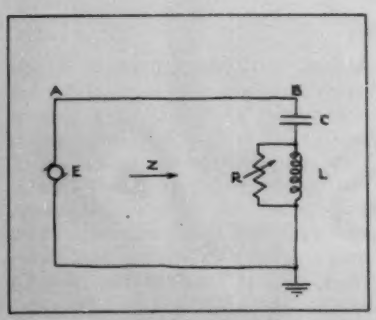


Fig. 1. Method by which remote modulation of the carrier can be accomplished.

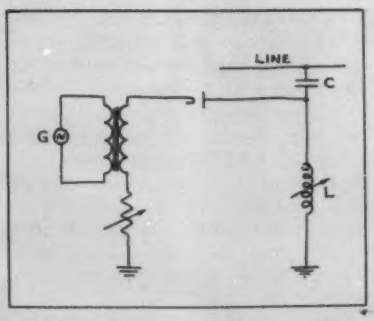


Fig. 2. A simplified diagram of the remote modulator is illustrated in this figure.

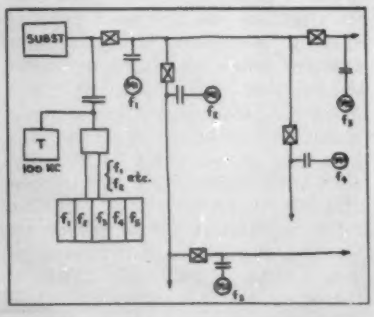


Fig. 3. Illustration of a radial distribution system using a 100-kc carrier to monitor five breakers.

current

by S. Lubin
Sprague Electric Co.
North Adams, Mass.

alarm in the form of a green light.

Where the system to be monitored is a network rather than a radial system, the power to the modulator is controlled by means of auxiliary contacts or a relay operated by the monitored breaker. Similarly any on-off indication from any device can be obtained if the modulator power supply is controlled by the monitored device. Figure 3 illustrates a radial distribution system using a 100 kc carrier to monitor five breakers.

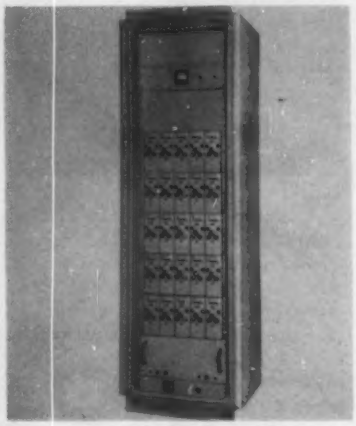
50 channels possible

The transmitter and receiver are shown connected to the main bus at the substation and modulators M_1 through M_5 on the load side of the monitored breakers. Audio frequencies f_1 through f_5 generated by the modulators produce audio modulation of the 100 kc carrier. After demodulation in the receiver, the five resulting audio tones are transmitted over a two-wire audio line to the indicator where they are separated by audio bandpass filters tuned to each of these frequencies. A separate indicator channel is provided in the indicator rack for each remote modulator.

The indicator channel bandpass

(*Continued on page 79*)

Remote modulator mounted on pole at end of single phase tap. Carrier coupling capacitor is seen at upper right of pole.



Twenty-five channel indicator cabinet. Input circuit is at top and power supply behind lower panel. Each channel selects its particular audio frequency and indicates by red or green light condition of monitored device.

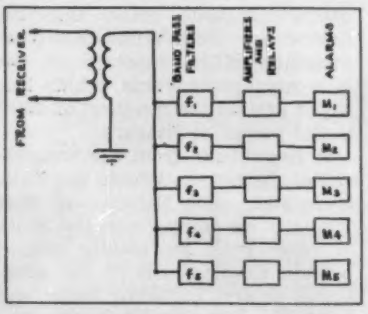


Fig. 4. The indicator unit showing the system of band pass filters, amplifiers and relays, and alarms.

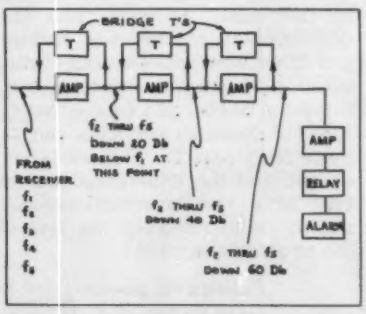
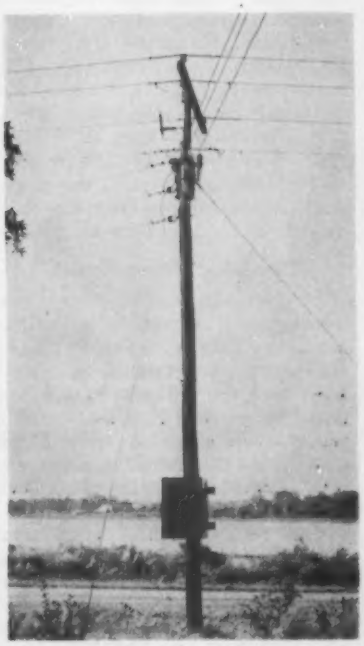


Fig. 5. An individual indicator channel in block form is pictured in this diagram.

Receiver shown pole mounted on main feeder just outside substation. Two-wire audio line carries up to 50 audio signals from receiver to indicator. Installations pictured on this page were made on lines of Clay Electric Co-op, Keystone Heights, Fla.

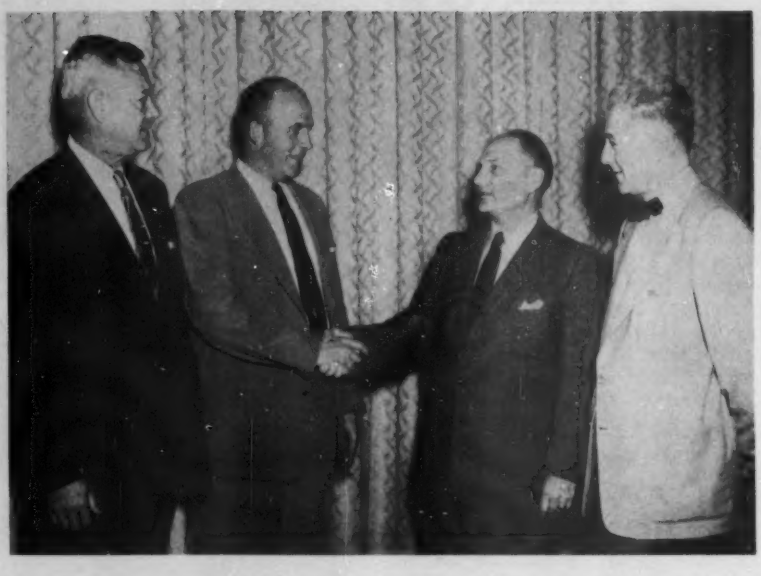


Central carrier transmitter shown pole mounted in weatherproof housing on 3-phase distribution feeder about one-half mile from substation. Coupling capacitor can be seen connected to center phase to left of cross-arm.

Virginia utility men meet

◆ AREA DEVELOPMENT, the continuing controversy over government versus private utility development of hydroelectric power and problems of adequate wiring were leading discussion topics at the recent two-day conference of public utility company officials from Virginia and West Virginia at White Sulphur Springs, W. Va. Some 400 persons, representing electric, gas, telephone and water companies, attended the 36th Annual Meeting of the Public Utilities Association of the Virginias.

One entire session of the conference was devoted to problems involved in promoting the economic development of the region served by the Association's member companies. Harllee Branch, Jr., president of the Georgia Power Company, Atlanta, Ga., spoke on "The Newer South," describing the recent large-scale movement of manufacturing plants to the southern states. He noted that industrialization of the South lagged for many years after the Civil War but received great impetus during and after World War II. At that time many defense plants were built in the South and their production records proved the high quality of the southern labor force.



New officers of the Public Utilities Association of the Virginias are, left to right, Don B. Potter, administrative vice-president, Monongahela Power Company, Fairmont, W. Va., who was elected first vice-president of the association; A. J. Bowen, division manager, Northern Virginia Power Company, Winchester, Va., who is the new association president; Erwin H. Will, vice-president and general manager, Virginia Electric and Power Company, Richmond, Va., the organization's retiring president; and William J. Stewart, assistant general manager, Wheeling Electric Company, Wheeling, W. Va., elected second vice-president of P.U.A.V. Officers reelected but not present when the picture was made are R. W. McKinnon, Roanoke, Va., executive secretary; John C. Parrott, president, Roanoke Gas Company, Roanoke, Va., P.U.A.V. treasurer; and A. T. Ellett, Roanoke Gas Co., assistant treasurer.

Tasks for "Newer South"

Mr. Branch reported that the development of southern educational institutions, research laboratories and other facilities has kept pace with the influx of new industries. He warned that there still is much developmental work to be done in the South and business and civic leaders should not slack their efforts in this direction.

The future of the bituminous coal industry, which is one of the knotty economic problems of Virginia and West Virginia, was discussed by Dr. George T. Felbeck, vice-president, Carbide and Carbon Chemicals Company, New York, N. Y. Dr. Felbeck outlined recent developments, both in coal mining machinery and in the use of coal as a raw material for chemical manufacturing, which should expand the markets for coal and put the industry in a firmer economic position.

New mining equipment can drastically reduce the cost of coal at the mine, he said, and the development of the coal turbine and other new coal burning equipment may vastly increase consumption of coal as a fuel. A multitude of chemical products can be made from coal, Dr. Felbeck pointed out, and the widespread use of coal as a raw material depends mainly upon reducing the cost of the processes involved.

Politics vs. power

At another conference session, Representative William E. Miller, of New York, spoke on "Political Power Versus Water Power." A co-sponsor of the Capehart-Miller Bill providing for development of additional hydroelectric power at Niagara Falls by privately-owned utility companies rather than the federal or state governments, Congressman Miller reported on the four-year controversy which has raged around the question of additional power at Niagara.

A Republican from the congressional district in which the Falls is located, Mr. Miller said that virtually all interests in the State of New York are solidly behind private development of the additional power, including labor and farm groups in every county. The Capehart-Miller Bill passed the House of Representatives but did

(*Continued on page* 80)

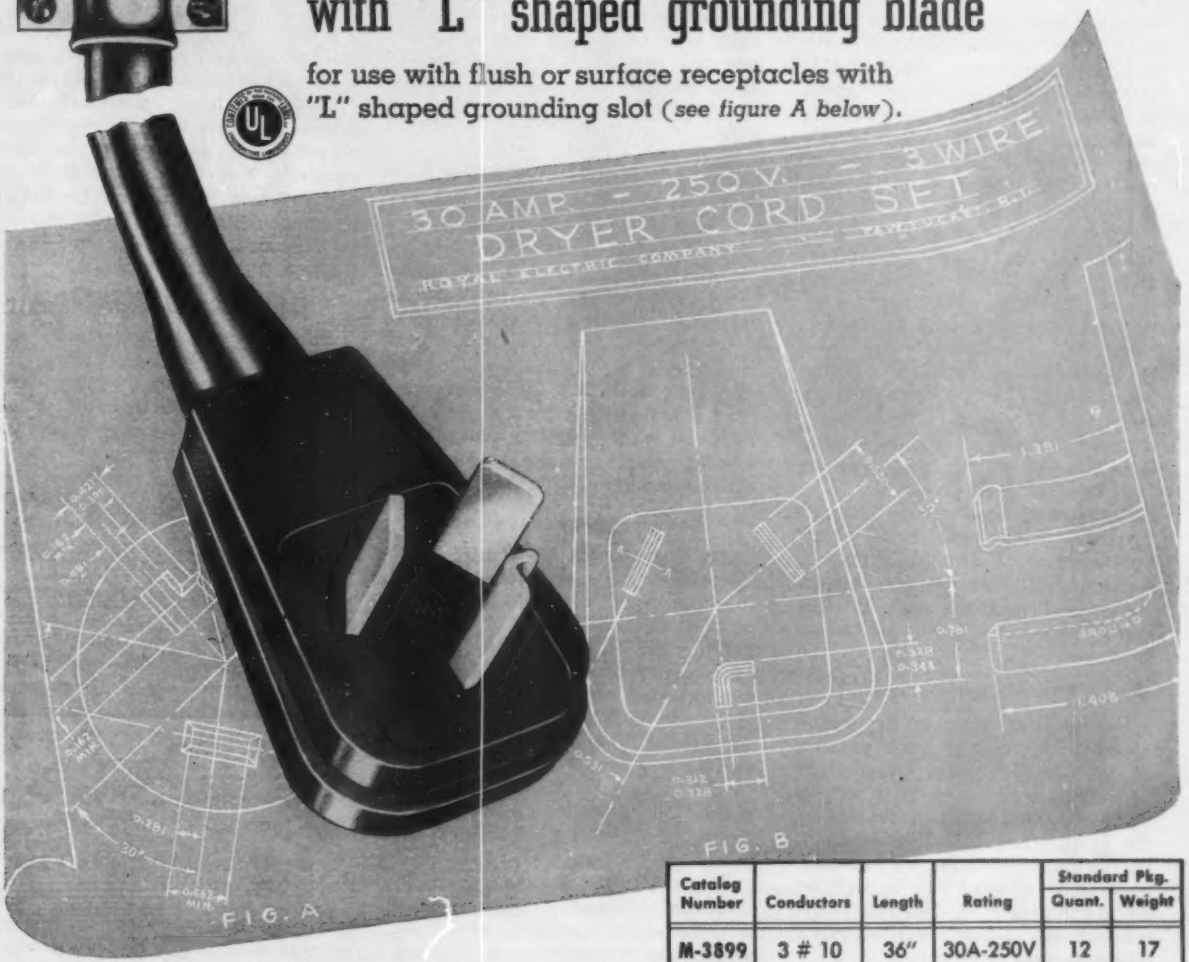
Safety...economy...dependability

are molded into ROYAL

DRYER CORD SETS

with "L" shaped grounding blade

for use with flush or surface receptacles with "L" shaped grounding slot (*see figure A below*).



Catalog Number	Conductors	Length	Rating	Standard Pkg. Quant.	Standard Pkg. Weight
M-3899	3 # 10	36"	30A-250V	12	17
M-3900	3 # 10	48"	30A-250V	10	17
M-3901	3 # 10	60"	30A-250V	8	18
M-3902	3 # 10	72"	30A-250V	6	17

Here's a new cord set engineered especially for use with dryers and other appliances and equipment which require only 30-Amp service under NEMA standards and the new UL code.

This new molded, all-rubber Royal cord set has the same quality characteristics of Royal Range Cord Sets, "POWR-KORDS", and the full Royal molded cord line . . . the kind of quality which always assures complete dependability and satisfaction to you and your customer.

buy ROYAL... you'll sell better!

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Makers of WIRE • CORD SETS • FUSES

ROYAL

PAWTUCKET, RHODE ISLAND
WIRING DEVICES • CHRISTMAS "ROYALITES"

Will your business get its share of tax relief?

◆ THE SWEEPING new tax code is estimated to have cut $1,363,000,000 from business and personal taxes this fiscal year. Perhaps twice that sum will be saved in future years.

Is your business getting ready to take its legitimate share of this tax relief? Many of the provisions are already in effect. The operating decisions you are making day by day may determine whether or not you can get the most benefit from the new provisions.

You should consult your tax adviser at once if you have not already done so. The gimmicks are many. The "ifs," "ands" and "buts" pop up all over the place. It will take an expert to guide you through the fine print. Though in general the new tax law is much more liberal toward business than the old one, some loopholes have been plugged and some provisions bear down a little harder.

Seven main areas can be spotlighted. But remember, every business has its own conditions to consider. No general statement should be applied without full study and consultation with an expert.

Faster depreciation

Depreciation write-off is greatly speeded. A much greater portion of the cost of new (not used) equipment can be written off in the early part of the useful life of the asset. Under one new method, for example, double the amount previously allowed can be written off in the first year. Obviously this is big news to a business that wants to modernize or expand.

The deductions are no greater over the entire useful life, but they are much greater in those years when the expenditure is most felt and before returns may begin to taper off because of obsolescence. Ask your tax adviser how the various new methods can help you —the "declining balance" method . . . the "sum-of-the-years'-digits" method . . . Don't let the lingo throw you!

Ask him whether a "switch" from one method to another might be advantageous. Be sure to note that some switches are automatically permissive and some are not, and that the kind of records you keep (or fail to keep) may defeat the benefit the law holds out to you.

Research and development

If you have been leasing equipment instead of buying outright, you may want to re-appraise your practice in the light of the new laws. And perhaps you will want to look into earlier disposal of used equipment.

Research and development costs may now be deducted in the year they are incurred. You no longer have to wait to get a patent or give up your experiment as a failure before deducting your costs.

Realistic tax accounting

Tax accounting under the new law has been brought more nearly into line with generally accepted accounting principles. Income reporting can be more realistic. You can deduct from current receipts estimates of such future expenses as refunds and rebates, allowances for discounts, claims for damages, etc. You can report advance rentals in the years in which they will be earned and in which you will have expenses such as maintenance or repairs to deduct.

The estimated expenses can be deducted if you can make a reasonably accurate estimate based on your own experience or that of others in similar circumstances. Of course only those anticipated expenses which apply to the revenue of the current period may be deducted.

Altogether there will be less difference between taxable income and net income as it is figured by accountants for ordinary business purposes.

Lower corporate taxes

Partnerships and proprietorships now may, under certain circumstances, elect to report and be taxed as corporations. Some businesses will want to take advantage of the lower corporate rates at certain levels, remembering, however, that once elected the practice must be continued unless there is a 20 per cent or more change in ownership. And remembering, too, that though owners may escape an immediate high personal tax bracket by electing to report as corporations, assets kept in the business may later be subject to estate tax or income tax (as dividends or capital gains). Take care to look into all aspects with your C. P. A. before you change!

Expansion from earnings

Retention of earnings for future expansion or modernization is made easier by the granting of a $60,000 accumulation-credit (total for all years). Also, if any part of a greater accumulation is deemed not for "reasonable needs" of the business, the penalty tax is applied only to that particular part, not to the entire accumulation for the year, as formerly.

Most important of all, burden of proof is now laid upon the Internal Revenue Service, not on you. In most cases, a business with legitimate savings for bonafide purposes of expansion or modernization need no longer fear the penalty tax.

Some payments accelerated

All is not sheer velvet, however, for the corporations. Those with an anticipated tax liability of $100,000 or more must make their tax payments earlier in the year. The process is to be stepped up gradually over a five-year period. A firm which uses the calendar year (fiscal year corporations will use corresponding dates) will pay five per cent of its 1955 tax in September 1955, five per cent in December 1955, and 45 per cent in March and again in June of 1956. Each year the September and December payments will increase and the March and June payments will decrease until there will be equal instalments of 25 per cent in September and December of 1959 and March

(*Continued on page* 82)

This article is based on material supplied by the American Institute of Accountants, national professional society of certified public accountants.

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Service Entrance Cable

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The new Rome Service Entrance Cable is easy to handle, neat, clean . . . and not subject to "bleeding" so prevalent with many service cables.

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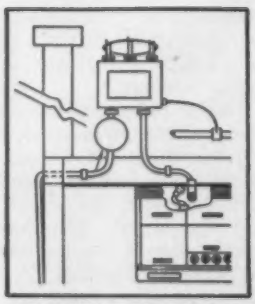

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Know the law

by Arthur L. H. Street

Materialman's right to designate payments

◆ WHERE an electrical contractor regularly buys his materials from a particular dealer and is indebted to the latter on old accounts when he buys certain materials for use on jobs, complications can arise if the contractor makes payments on his account without instructing the dealer as to the items against which the payment is to be applied.

This is illustrated by a case lately decided by the California District Court of Appeal, Second District, in Los Angeles, Hollywood Wholesale Electric Co. v. John Baskin, Inc., 263 Pac. 2d 665.

Application of bond

Defendant, a general contractor, gave a bond to pay for all materials used on school building construction, and sublet the electrical work. The electrical subcontractor bought materials for the job from plaintiff to whom the subcontractor was indebted on previous purchases of material. Afterwards the subcontractor received payments on the school job and turned them over to the plaintiff, the electrical supply company, without directing that they be credited against bills for materials furnished for the school buildings or any other particular account.

The supply company did not know where the money came from and credited old accounts owed by the subcontractor. Under these circumstances, the court decided that the supply company had a right to credit the payments as it did and could collect on the general contractor's bond for the balance due as shown by its books for material used on the school building job.

Terminated contract's effect on contractor

◆ AN ELECTRICAL CONTRACTOR, his lawyers and a county court judge all guessed wrong as to what damages the contractor was entitled to collect when an owner discharged him when the work had been partly performed, and employed another contractor to finish the job.

The contractor was engaged to wire a new home in Las Vegas, Nev., for $1,410, 80 per cent to be paid when the work had been roughed-in and inspected by the city building inspector, and the balance on final completion of the job and inspection.

Nature of suit

The work was roughed-in and the municipal inspector approved it, but the owner, after paying $500 on account, refused to pay the full 80 per cent and discharged the contractor on the ground of dissatisfaction with his work. Another contractor finished the job at considerable additional expense to the owner.

The first contractor sued, demanding that he be paid the full amount of the 80 per cent of the contract price, plus the amount of profits lost through being prevented from finishing the job. The owner counterclaimed for damages—the increased cost of having the second contractor do the work when the first contractor, allegedly, had failed to do his work properly.

The trial judge, after hearing the evidence, decided that the first contractor had done his work according to contract, that the owner improperly discharged him, and therefore, the contractor was entitled to what he demanded.

The owner appealed to the Nevada Supreme Court, which decided that the trial judge was right in deciding that the contractor was improperly discharged, but wrong in deciding how the damages should be figured. (Fuller v. United Electric Co., 273 Pac. 2d 136.)

High court decision

The Supreme Court decided that the damages should be figured by taking the contract price, $1,410, as a base and deducting what it would have cost the contractor to complete the work that remained to be done.

The court reasoned, as most high courts probably would, that, having contracted to do a complete job for $1,410, the contract might or might not have shown a profit. The cost of completing the job might be so much as to show a loss, rather than a profit under the contract. The trial judge erred in figuring the damages by adding $225 to the balance unpaid on the 80 per cent progress payment due (1,128), as profit the contractor was entitled to. The $225 was arrived at by figuring a 20 per cent profit on the $1,128.

The Supreme Court eliminated both the allowance for supposed profit that would have ben earned and the $1,128 figure. The provision for payment of 80 per cent of the contract price assumed that the contract would be fully performed and the $1,128 payment would be merely on account, and not regarded as payment for the work previously done. So the case was sent back to the trial judge with directions to determine on proper proof what it would have cost the contractor to complete the job, deduct that sum plus the $500 that had been paid from the contract price, and give the contractor judgment for any balance that remained.

The court also indicated that had the contractor been discharged before he had done any work under the contract, his damages would have been measured by the same rule: by deducting from the contract price what it would have cost the contractor to do the work.

The decision rendered by the Nevada Supereme Court is in line with one rendered by the Georgia Court of Appeals in another recent case, Luckie v. Max Wright, Inc., 82 S. E. 2d 660.

Oral agreement

In the Georgia case, Luckie was erecting a building and orally agreed to let the Wright company install a heating and air-conditioning system in the building on definite terms, but refused to permit the company to do any work under the contract. The contract price was $16,537.50, and in the company's suit for damages it was claimed that the work could be done for $12,448.28, which would have left a profit of $4,089.22.

After hearing the evidence as to

(*Continued on page* 82)

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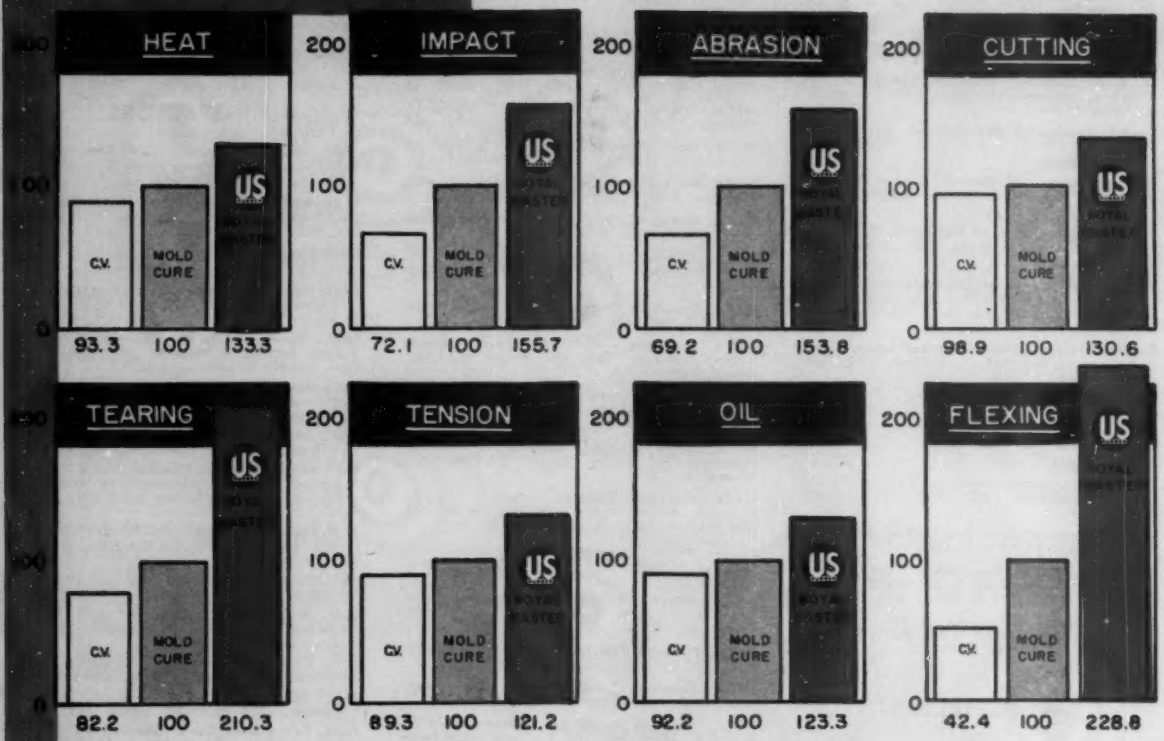

Comparative performance of portable cords related to major life factors.

Graphs illustrate the outstanding superiority of new U. S. Royal Master Cord—over the average of molded cords and the average of short-lived continuous vulcanized cords of other makes—on every major life factor. (Average of other molded cords is rated at 100%.)

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ELECTRICAL WIRE AND CABLE DEPARTMENT

MASTER portable cord *outlasts all others!*

Comparative tests show U. S. Royal Master gives $1.88 in value for every $1.00 spent — almost *twice* the service value of the average of other molded cords!

Two years ago, "U. S." engineers began a *complete reexamination* of portable cord construction, service life, and the causes of cord failure.

Over 10,000 tests were made. More than a thousand cords of all leading makes, including our own famous U. S. Royal Cord, were analyzed, tested, and compared.

Every life factor was considered and carefully evaluated, alone and in its relation to overall cord performance and service life.

Backed by 64 years of experience in the manufacture of electrical wire and cable, U. S. Rubber engineers then translated their findings into an entirely new portable cord, designed to surpass any other previously made.

Extensive tests, both in the laboratory and in outside plant installations have proved this new portable cord startlingly superior in every respect!

New U. S. Royal Master is unquestionably the finest cord you can buy!

From every standpoint, as the charts at left illustrate, new U. S. Royal Master is a finer, more durable cord—actually gives 88% longer life than the average of competitive molded cords—far longer than *any* other cord—surpassing even a hypothetical cord incorporating the best features of all those tested!

Far greater value, too! In spite of almost doubled service life, this great new cord is in the same price category as other molded cords—giving you $1.88 in cord value for every cord $1.00!

Prove to yourself the outstanding superiority of new U. S. Royal Master Portable Cord — in both service life *and* economy! Get in touch with your "U. S." distributor today!

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2 - POLE "AC"

AMP. SIZE	HRS. EA.	LABOR COST INSTALLED EACH AT FOLLOWING RATES										
		$1.25	$1.50	$1.75	$2.00	$2.25	$2.50	$2.75	$3.00	$3.25	$3.50	$3.75
30	1.8	2.25	2.70	3.15	3.60	4.05	4.50	4.95	5.40	5.85	6.30	6.75
60	2.3	2.88	3.45	4.03	4.60	5.18	5.75	6.33	6.90	7.48	8.05	8.63
100	4.1	5.13	6.15	7.18	8.20	9.23	10.25	11.28	12.30	13.33	14.35	15.38
200	6.4	8.00	9.60	11.20	12.80	14.40	16.00	17.60	19.20	20.80	22.40	24.00
400	8.3	10.38	12.45	14.53	16.60	18.68	20.75	22.83	24.90	26.98	29.05	31.13
600	12.5	15.63	18.75	21.88	25.00	28.13	31.25	34.38	37.50	40.63	43.75	46.88
		3 - POLE										
30	2.3	2.88	3.45	4.03	4.60	5.18	5.75	6.33	6.90	7.48	8.05	8.63
60	2.9	3.63	4.35	5.08	5.80	6.53	7.25	7.98	8.70	9.43	10.15	10.88
100	5.0	6.25	7.50	8.75	10.00	11.25	12.50	13.75	15.00	16.25	17.50	18.75
200	7.8	9.75	11.70	13.65	15.60	17.55	19.50	21.45	23.40	25.35	27.30	29.25
400	10.2	12.75	15.30	17.85	20.40	22.95	25.50	28.05	30.60	33.15	35.70	38.25
600	15.2	19.00	22.80	26.60	30.40	34.20	38.00	41.80	45.60	49.40	53.20	57.00
		4 - POLE										
30	2.6	3.25	3.90	4.55	5.20	5.85	6.50	7.15	7.80	8.45	9.10	9.75
60	3.3	4.13	4.95	5.78	6.60	7.43	8.25	9.08	9.90	10.73	11.55	12.38
100	5.7	7.13	8.55	9.98	11.40	12.83	14.25	15.68	17.10	18.53	19.95	21.38
200	8.9	11.13	13.35	15.58	17.80	20.03	22.25	24.48	26.70	28.93	31.15	33.38
400	11.7	14.63	17.55	20.48	23.40	26.33	29.25	32.18	35.10	38.03	40.95	43.88
600	17.4	21.75	26.10	30.45	34.80	39.15	43.50	47.85	52.20	56.55	60.90	65.25

LABOR: INSTALLING SWITCH AND CONNECTING ALL CONDUCTORS. WOOD MOUNTING.

OPEN TRENCH WORK

UNDERGROUND CABLE (STEEL SHEATHED)
TWO CONDUCTOR

CABLE SIZE	HRS."M".	LABOR COST INSTALLED PER FT. AT FOLLOWING RATES										
		$1.25	$1.50	$1.75	$2.00	$2.25	$2.50	$2.75	$3.00	$3.25	$3.50	$3.75
12	4.0	.005	.006	.007	.008	.009	.01	.011	.012	.013	.014	.015
10	6.2	.0078	.0093	.011	.0124	.014	.016	.0171	.019	.0202	.0217	.0233
8	7.2	.009	.011	.013	.0144	.0162	.018	.0198	.0216	.0234	.0252	.027
6	9.9	.0124	.015	.0173	.0198	.0223	.0248	.0272	.0297	.0322	.0347	.0371
4	12.8	.016	.0192	.0224	.0256	.0288	.032	.0352	.0384	.0416	.0448	.048
2	17.9	.0224	.0269	.0313	.0358	.0403	.0448	.0492	.0537	.0582	.0627	.0671
1	19.8	.0248	.0297	.0347	.0396	.0446	.0495	.0545	.0594	.0644	.0693	.0743
1/0	22.9	.0286	.0344	.0401	.0458	.0515	.0573	.063	.0687	.0744	.0802	.0859
2/0	26.1	.0326	.0392	.0457	.0522	.0587	.0653	.0718	.0783	.0848	.0914	.0979
3/0	29.2	.0365	.0438	.0511	.0584	.0657	.073	.0803	.0876	.0949	.102	.11
4/0	34.1	.0426	.0512	.0597	.0682	.0767	.0853	.0938	.102	.111	.119	.128
		THREE CONDUCTOR										
12	4.7	.0059	.0071	.0082	.0094	.011	.012	.013	.014	.0153	.0165	.0176
10	7.5	.0094	.0113	.0131	.015	.0169	.0188	.0206	.0225	.0244	.0263	.0281
8	8.7	.011	.0131	.0152	.0174	.0196	.0218	.0239	.0261	.0283	.0305	.0326
6	12.3	.0154	.0185	.0215	.0246	.0277	.0308	.0338	.0369	.04	.0431	.0461
4	15.9	.0199	.0239	.0278	.0318	.0358	.0398	.0437	.0477	.0517	.0557	.0596
2	22.4	.028	.0336	.0392	.0448	.0504	.056	.0616	.0672	.0728	.0784	.084
1	25.0	.0313	.0375	.0438	.05	.0563	.0625	.0688	.075	.0813	.0875	.0938
1/0	29.3	.0366	.044	.0513	.0586	.0659	.0733	.0806	.0879	.0952	.103	.11
2/0	33.5	.0419	.0503	.0586	.067	.0754	.0838	.0921	.101	.109	.117	.126
3/0	37.8	.0473	.0567	.0662	.0756	.0851	.0945	.104	.113	.123	.132	.142
4/0	44.5	.0556	.0668	.0779	.089	.10	.111	.122	.134	.145	.156	.167

LABOR: INCLUDES INSTALLATION AND CONNECTING TO BOXES (NO EXCAVATING OR TAPS).

Electrical Estimating—III

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ARE APPROVED AS CONCRETETIGHT

When setting E. M. T. in concrete you can make each job easier and more profitable by using Briegel All Steel Indenter Fittings that have UL approval as CONCRETE-TIGHT. Contractors the world over recognize their cost cutting qualities and the fact that they make each wiring job a better job. It is only natural that Briegel Fittings are the most widely used E. M. T. connectors and couplings.

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BRIEGEL METHOD TOOL CO.

GALVA, • ILLINOIS

Warehouse Stocks in Principal Cities for Immediate Delivery!

News of the industry

edited for Southern readers

Mississippi Power pushes adequate wiring program

DESCRIPTIVE SIGNS furnished by Mississippi Power & Light Co., calling attention to Adequate Wiring and All-Electric Living, are becoming more and more familiar to citizens of Jackson, Miss., every day.

Designed for recognition to builders who are including modern electrical features in their homes under construction, these signs provide prospective home - owners with quick assurance that they will not be troubled with what F. H. A. has listed for years as their number one complaint — not enough outlets.

The "Adequate Wiring" sign is placed only at those homes which have their electrical systems installed with the standards set up by the National Adequate Wiring Bureau for convenience, efficiency and safety. The "All - Electric Kitchen" sign means just that. The kitchen is equipped for a modern electric range, refrigerator, dishwasher and waste disposer.

The signs are available to all home builders in the Jackson area who are including these features in the homes they are building and can be obtained from Mississippi Power & Light upon request. Numerous builders are already using these signs, and every home in the Jackson Association of Home Builders "1954 Parade of Homes" is featuring Adequate Wiring.

Notable among recent additions to Jackson residential areas is the "Better Homes and Gardens" model home, which was opened for a three-week inspection recently in Jackson. Adequately wired throughout, this home, which was constructed by Floyd Kimbrough, Kimbrough Homes, Inc., featured complete light conditioning, an all-electric kitchen and automatic laundry, and electric air conditioning.

This open house did much for the Adequate Wiring program as thousands of visitors from all over Mississippi, and including people from Louisiana and Tennessee, toured the Kimbrough home during the three week period. Some 8,000 people made up the tremendous opening day crowd, and all expressed interest in the many electrical features of this modern home.

Planning assistance for the home's electrical system, as well as the large outside signs, was furnished by Mississippi Power & Light Co.

Building boom brightens nation's economic outlook

THE CONSTRUCTION BOOM continues with no end in sight, bolstered by dramatic shifts in population as well as by higher incomes and easy financing. That is the highlight of a report issued recently by the Chamber of Commerce of the United States.

The report continues: The construction boom is ramifying through many other sectors of the economy, such as utilities, household goods and appliances, while the volume of work in the hands of architects foreshadows sustained construction activity into 1955.

Other features of the economic outlook include: Spendable income (income after taxes) is at an all time high, partly because of recent tax cuts; foreign trade is improving; the gold and dollar balances of foreign countries in general are in better shape; unemployment insurance claims are declining; and the inventory situation has improved considerably.

In the second quarter of last year inventories were increasing at an annual rate of $6 billion, whereas in the second quarter of this year inventories were being used up at the rate of $5 billion a year. This represents a $11 billion shift in the inventory situation. Now the nation is selling and consuming more than it is producing and this foreshadows an increase in production.

Two types of population shifts are taking place, one from the cities to the suburbs, and a more general one to the West and South of the nation. These shifts are largely self-reinforcing, for as people go into the suburbs new utilities and transportation facilities are needed; new schools, churches and shopping centers are built.

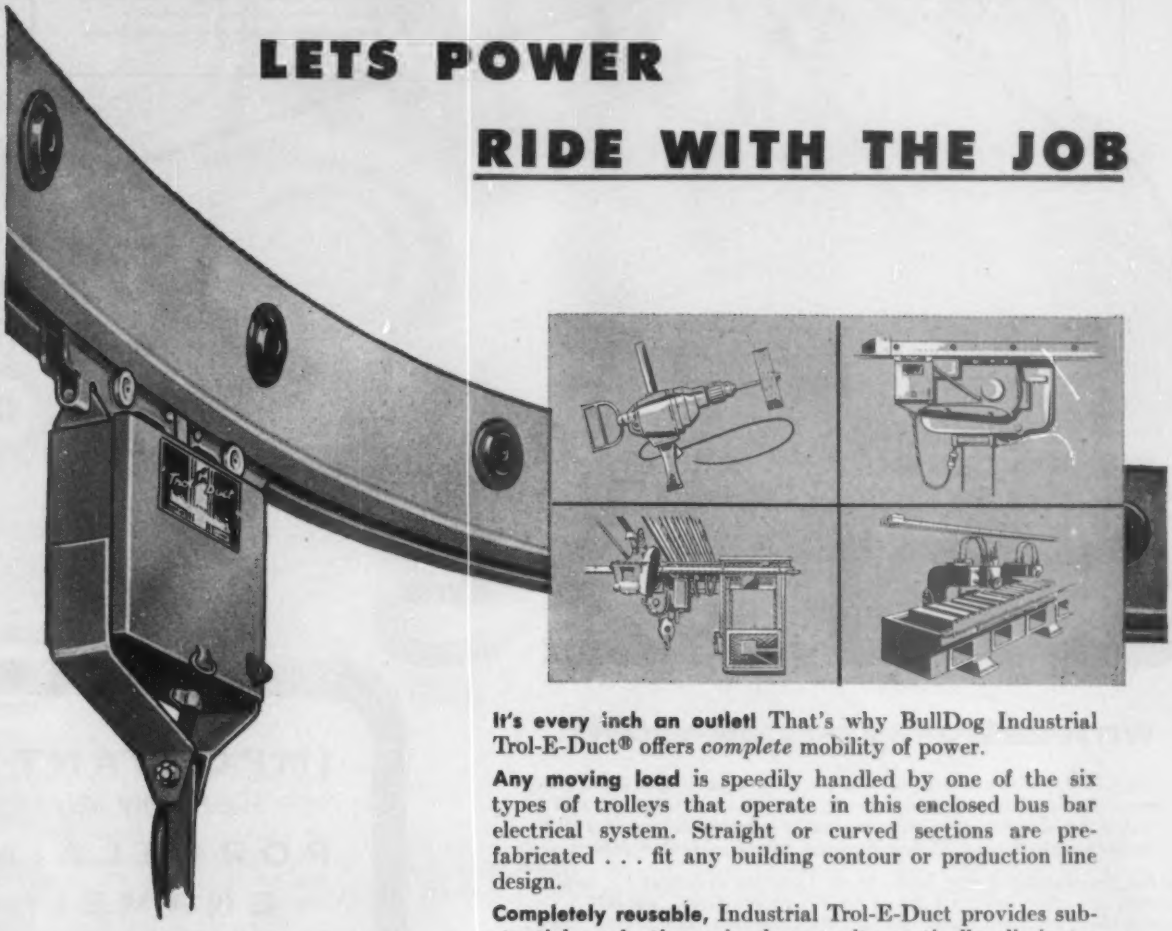
The movement to the West and South has reached such proportions that one-sixth of all non-

Woodrow Benton, Mississippi Power & Light Company's residential representative, places Adequate Wiring signs before a new Jackson home. These signs are becoming more familiar to Jacksonians every day. Right, the Kimbrough "Better Homes and Gardens" model home, which featured Adequate Wiring throughout.

BULLDOG INDUSTRIAL *Trol-E-Duct*

LETS POWER

RIDE WITH THE JOB



It's every inch an outlet! That's why BullDog Industrial Trol-E-Duct® offers *complete* mobility of power.

Any moving load is speedily handled by one of the six types of trolleys that operate in this enclosed bus bar electrical system. Straight or curved sections are prefabricated . . . fit any building contour or production line design.

Completely reusable, Industrial Trol-E-Duct provides substantial production gains because it practically eliminates "downtime." Trolleys can be removed and replaced without current shut-down . . . no sagging wire conductors to halt production for maintenance. There's no more time wasted hunting for a free outlet . . . no more messy, dangerous extension cords.

Industrial Trol-E-Duct is another thoroughbred BullDog product designed to provide matchless economy with highest efficiency and flexibility. Write today for free Bulletin IT-655. BullDog Electric Products Company, Detroit 32, Michigan. *Export Division:* 13 East 40th Street, New York 16, New York. *In Canada:* BullDog Electric Products Company (Canada), Limited, 80 Clayson Road, Toronto 15, Ontario.

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ELECTRIC PRODUCTS COMPANY
A Division of I-T-E Circuit Breaker Company

CONSULT THE FOLLOWING SOUTHERN REPRESENTATIVES:
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RECOMMENDED WHERE:

1. Seeing tasks demand 25 footcandles or more.
2. Walls, ceilings, machinery, etc., have good reflectance.
3. You need *super-comfortable* illumination.
4. Maintenance costs are important.
5. *Best* lighting is required at *reasonable* cost.

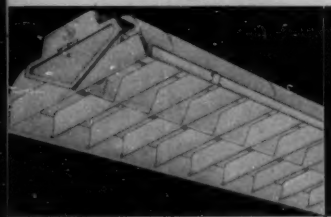
THE REVOLUTIONARY NEW LIFETIME

CFI-25

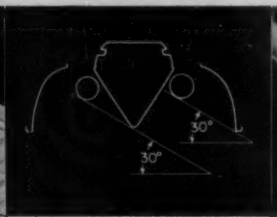
WITH 25% UPWARD COMPONENT

The CFI-25 is more than a new fixture. It is the beginning of a new era of super-comfortable industrial lighting. For the first time, the CFI-25 makes available a rugged, premium quality industrial fixture with all the comfort advantages of 25% uplighting—*within a practical price range!*

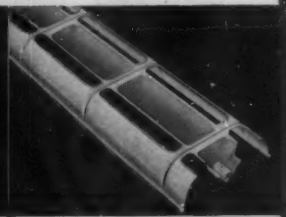
See this sensational new development. Compare it—feature for feature—with any other industrial fixture on the market. Notice the full 8-foot, one-piece, porcelain enameled reflectors... the new "bridge-type" ribbed construction... super-comfortable shielding... the many, many features that make the CFI-25 the most modern product in its field. Available for 8 ft. Slimline, 4 ft. Rapid Start and the newly developed 8 ft. High-Output Rapid Start lamps.



20° LENGTHWISE SHIELDING. Optional louver assembly provides excellent visual comfort. Louvers furnished in 4-ft. sections, hinge either side for easy servicing.



30° CROSSWISE SHIELDING. Porcelain reflector provides comfortable 30° crosswise shielding, adds substantial strength and rigidity to the fixture.



NEW RIBBED CONSTRUCTION. Reflectors reinforced by die-embossed ribs between apertures. Ribs add lateral stability, prevent spreading, maintain straight fixture edges.

IMPORTANT!

Here's why *only*

PORCELAIN ENAMEL

is used for CFI reflectors!

An industrial lighting fixture is no better than the wearing qualities of its reflecting surfaces. The lasting qualities of baked enamel reflectors are questionable in industrial applications. *Only porcelain enamel guarantees a lifetime of service at the least cost.*

Porcelain enamel does not decay or change with age because it is *inorganic*—nothing but rock-like minerals that are actually melted and fused to the base metal under extremely high temperature (1400-1600°). The result is a

CFI MEANS COMFORT FOR

CALL OR WRITE YOUR NEAREST DAY-BRITE REPRESENTATIVE FOR THE

THE NEW DAY-BRITE
LIFETIME INDUSTRIAL SERIES—
ONLY INDUSTRIALS WITH FULL
8-FOOT, ONE-PIECE, PORCELAIN
ENAMELED REFLECTORS

THE LIFETIME

CFI-10

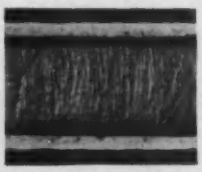
WITH 10% UPWARD COMPONENT

Sets a new high standard for industrial lighting fixtures! 10% uplighting reduces glare and lessens brightness contrasts. Full 8-foot, one-piece, porcelain enameled reflectors featuring new super-rigid ribbed construction. Runs line up perfectly, *stay perfect.* Available for 8 ft. Slimline, 4 ft. Rapid Start and the newly developed 8 ft. High-Output Rapid Start lamps. Engineered and built to give a *lifetime of service.*

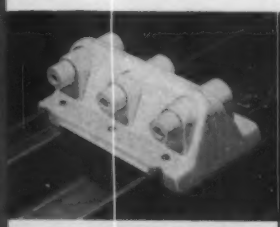
flint-hard, indestructible bond of metal and finish that is unaffected by time, heat, moisture and other harmful elements.

No baked enamel finish can assure you the non-yellowing, noncorrosive reflection surface that porcelain enamel does. There are no tiny surface pores in porcelain enamel. Any dirt or stain is external and is easily wiped away.

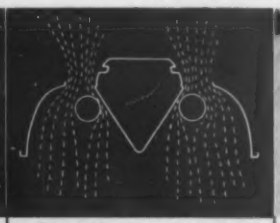
Because of its undisputed superiority, specially formulated porcelain enamel with a reflector factor of 85% or more is the one and only finish Day-Brite uses on the reflection surfaces of the CFI-25 and the CFI-10 ... to make them in fact — as well as in name — a *Lifetime* industrial lighting value.



Microphoto shows how metal and porcelain enamel fuse together to form lifetime bond.



SPRING-LOADED SOCKETS. Firm lamp contact, firm seating. Metal clad for positive alignment and protection against breakage. Individually replaceable.



COOLER, CLEANER OPERATION. Diagram demonstrates "up-draft" action through apertures. Constant flow of air keeps dust from settling, reduces operating temperature.

FAST, SIMPLE MAINTENANCE. Reflectors on or off in seconds, fasten to channel by hand-operated 2" wing-nuts. Porcelain enamel wipes clean quickly, is noncorrosive.

INDUSTRY!

COMPLETE QUALITY STORY

"DECIDEDLY BETTER"
DAY-BRITE
Lighting Fixtures

Day-Brite Lighting, Inc., 5435 Bulwer Ave., St. Louis 7, Mo. In Canada: Amalgamated Electric Corp., Ltd., Toronto 6, Ontario.

4107

manufacturing jobs in the whole country are now located in California and Texas. One reason for this shift, the National Chamber states, is that automobile travel has made the advantages of milder climate apparent to more persons.

A four per cent increase in overall construction during the first eight months of this year took place in spite of a steady decline of investment in new plant and equipment, the Chamber pointed out. The gain is accounted for by commercial, state and local government, highway and home construction.

A feature of the home building activity is that the marriage rate is down, while the rate of household formation is holding up. This, the Chamber said, may be the result of social security and the increasing number of private pension systems, which provide incomes to more and more elderly couples and enable them to continue as separate households.

Accord reached on room cooler power factors

INTER-INDUSTRY ACCORD on recommended minimum power factors for room air conditioners has been reached with the recent release of a report by the Joint Committee on Air Conditioning and Refrigerating Equipment, which is composed of representatives from the Air Conditioning and Refrigeration Institute, Edison Electric Institute, and National Electrical Manufacturers Association. This report results from months of careful study by the Joint Committee and other interested groups.

The report establishes recommended minimum power factor values based on unit size, calling for a minimum of 75 per cent for 1/3 hp room units, 80 per cent for 1/2 hp units, and 85 per cent for 3/4 hp and larger. Power factors are to be measured at Underwriters' Laboratories maximum normal load test conditions—104 F db and 80 F wb on both sides of the unit and 120, 208, or 240 volts (depending on the unit voltage rating) at the unit service connection. These recommended minimums are to be effective starting with 1956 models.

The three associations and the Joint Committee have been actively studying this problem for some time and the report stated that they had benefited from the experience of utility companies in the South and Southwest "where the use of this equipment is greatest."

The date of January 1, 1956, was selected as the earliest practical date for application of the minimum power factor values proposed due to the fact that manufacturers have found it necessary to complete new designs in the Spring months so that components may be ordered and delivered in time for production to begin in late Summer or early Fall. Thus, 1955 designs have been completed, and components are now being manufactured. However, it is expected that significant progress toward the recommended minimum power factor values will be achieved in 1955 models.

First 230 kv breakers installed by Duke Power

THE HUGE RIVER BEND Steam Plant of Duke Power Co., Charlotte, N. C., is the location of two new General Electric 230 kv oil circuit breakers. These breakers, said to be the first of their rating in the Southeastern states, will protect transmission lines for units Number 5 and Number 6 at the River Bend Plant which are General Electric 150,000 kw turbine generator sets.

By increasing their transmission voltages to 230 kv, Duke Power will be able to more economically and efficiently transmit large blocks of power to their major load areas. The Duke Power system has increased so rapidly in the past five years that its engineers foresaw that higher transmission voltages would be necessary if their system was to keep pace with the growing load.

In addition, the last eight turbines which they have purchased are all in the 100,000 kw class or greater, thus requiring higher transmission voltages to obtain greater system economies. The higher ratings will permit Duke to reduce line losses and make a considerable saving in transmission.

Maryland group holds 30th Fall Conference

SOME 375 MEMBERS attended the 30th Fall Conference of the Maryland Utilities Association at the Cavalier Hotel, Virginia Beach, Va., recently, according to an announcement by Robert L. Smith, secretary of the organization.

The well-rounded program included the following speakers and addresses:

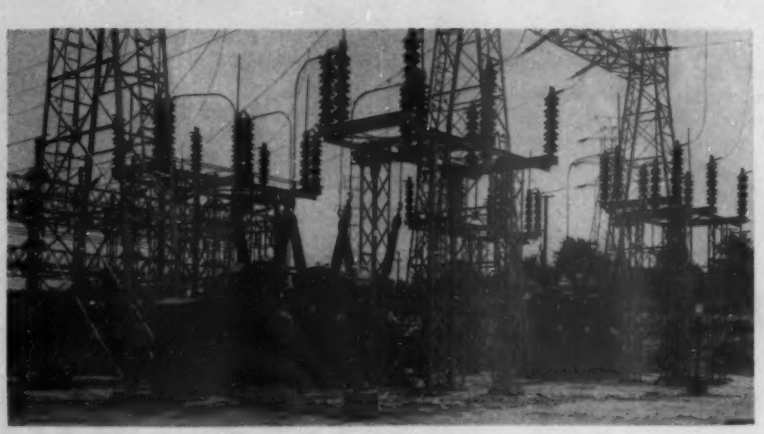
William J. McManus, vice-president, the Chesapeake and Potomac Telephone Companies, Washington, D. C., "The Importance of Public Attitude"; John H. Hessey, chairman, Public Service Commission of Maryland, Baltimore, "Utility Regulation"; Charles W. Williams, vice-president, Federal Reserve Bank of Richmond, Va., "Economic and Financial Prospects for 1955"; and C. M. Wallace, vice-president, Georgia Power Co., Atlanta, "Selling Utility Service."

The two-day program included several well-planned entertainment sessions.

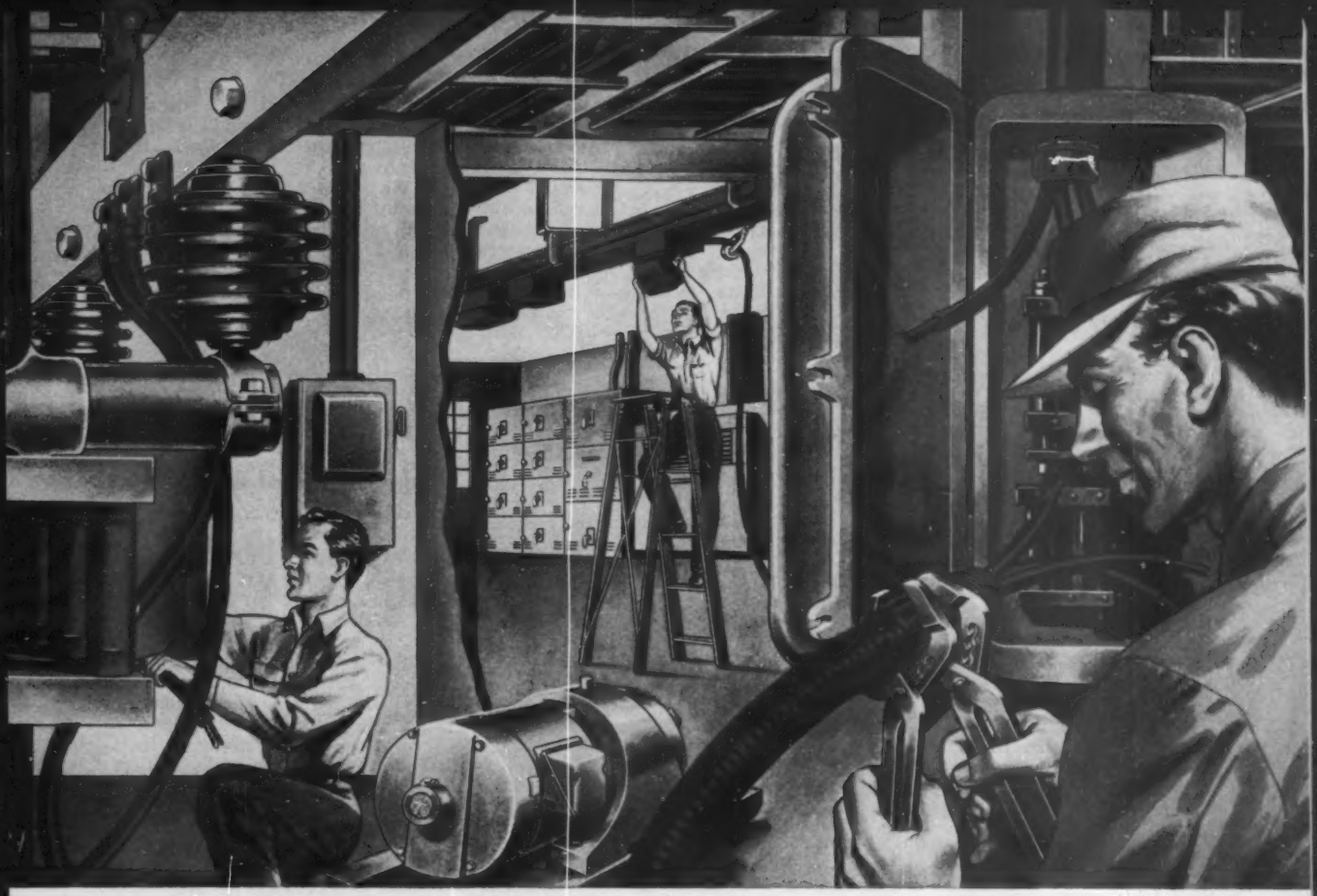
Officers of the association for 1954-55, in addition to Mr. Smith, are J. Frank Blake, Jr., Elkton, Md., president; George M. Nelson, Salisbury, Md., first vice-president; C. Oscar Berry, Washington, D. C., second vice-president; and Austin E. Penn, Baltimore, Md., treasurer.

REA estimates 92.3% of farms electrified

ABOUT 92.3 PER CENT of the Nation's 5,382,134 farms had electric service as of June 30, 1954, the U. S. Department of Agriculture has announced. This compares with 90.8 per cent electrified on June 30, 1953, and 77.2 per cent electrified at the time of the 1950 Census.



Overall view of the two new type 230-kv oil circuit breakers located at the Duke Power Company's River Bend Steam Plant, near Charlotte, N. C.



Power distribution systems that can effectively handle future demands are the surest way to avoid electrical obsolescence and costly rewiring.

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"Plan in" future plant flexibility . . . today

Two FREE booklets on new mineral-insulated wiring system

Mineral-insulated cables available via Graybar represent today's newest wiring method. Acting as its own conduit, m.i. cable trains to any contour . . . is unaffected by weather, corrosive vapors, cold or flame.

1. Type m.i. safety mineral-insulated cable — booklet provides complete information on conductor characteristics and suggested applications.

2. NELEX Mineral-insulated heater cable — pertinent data on how it can lower heating costs and provide a higher safety factor is contained in this illustrated booklet.

Planning extra power capacities for future expansion is an important consideration in new plant construction. Today's pressure of electrical growth often outstrips power-carrying capacity long before the equipment itself becomes outmoded. This then, is the most important reason why it pays to call Graybar *first* for planning aid on any wiring job. A Graybar Inside Construction Specialist can not only help you determine a power-distribution system to satisfy your customer's present and near-future needs, but also to "plan in" flexibility for long range expansion.

Over 100,000 different electrical items are distributed by Graybar through its nation-wide system of offices and warehouses. Complete catalog and quotation service covering them is available to help you work out job estimates and specifications — for lighting, power, control, ventilation, communications, as well as wiring.

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The new survey by the Rural Electrification Administration shows that there were 416,172 unelectrified farms on June 30, 1954, as compared with 493,674 a year earlier. On the basis of the total number of farms shown in the 1950 census, this indicates that 4,965,962 farms were receiving central station electric service as of June 30, an increase of more than 77,000 during the previous year.

Under the Rural Electrification Act, REA is required to estimate the number of unelectrified farms in each State on June 30 of each year. This provides a basis for allotting electrification loan funds among the states. Because of the high percentage of farm electrification, REA made a special effort this year to pinpoint the farms remaining without service. The customary unelectrified farm survey was broadened, and special studies were utilized in certain areas.

This new information resulted in substantial increases over a year ago in the estimated numbers of unelectrified farms in some Midwestern and New England states.

The number of electrified farms rose by more than 5,000 during the fiscal year in these states: Kentucky, increase of 9,349 farms; Tennessee, 8,448 gain; North Carolina, 8,230 gain; Mississippi, 7,350 gain; Georgia, 5,463 gain, and Missouri, an increase of 5,240 electrified farms.

South Dakota again showed the biggest gain in its per cent of farms electrified, 5.2 per cent, bringing its percentage to 92.7. Other leading state increases were Kentucky, 4.3 percentage points; Tennessee and Colorado, 3.7 points, and Florida, 3.6 points.

The survey showed that Virginia, with 97 per cent of its farms electrified, led the Southern states in this department. Mississippi had the lowest percentage of electrified farms with 74.6.

NAED names Hooper executive director

THE FOURTH EXECUTIVE DIRECTOR in the long, illustrious 46 year history of the National Association of Electrical Distributors has been chosen. He is Arthur W. Hooper, who, for the past eight years has been a member of the editorial staff of *Electrical Wholesaling* magazine. Mr. Hooper, a graduate of Columbia University, has headed the magazine staff as its editor since 1951. During these years as a publications executive, Mr. Hooper has been in continuous contact with members of the electrical distribution and manufacturing industries, and he has become widely recognized as a result of the many contributions he has made to the progress of the electrical industry.

As the new executive director of NAED, he follows in the eminent footsteps of such industry leaders as Franklin P. Overbagh who served the Association from 1908 (the founding year) to 1928, and under whose direction NAED, then

A. W. Hooper

the Electrical Supply Jobbers Association, first established itself as an organization sincerely dedicated to the welfare of the electrical industry and its distributor members.

Upon Mr. Overbagh's retirement, after 20 years of service, Attorney E. Donald Tolles ably led the Association to a position of increased importance as its activities and membership grew throughout a 14 year period from 1928 to 1942. It was during the administration of Mr. Tolles that the Association changed its name to National Electrical Wholesalers Association, a name more descriptive of the services performed by its membership. (In 1949 the Association became known as the National Association of Electrical Distributors.)

Charles G. Pyle, formerly general sales manager of the Sylvania Corp., succeeded Mr. Tolles in 1942. Mr. Pyle, among many other accomplishments, was instrumental in the formation of an Electrical Appliance Division. The inclusion of Appliance Distributors made the Association more representative of the industry than it had been when only Apparatus and Supply Distributors were eligible for membership. Association membership continued to grow until at the time of Mr. Pyle's death in July of this year NAED had become one of the largest trade associations in the United States—with over 1100 active members. Few associations have had the benefit of such outstanding, continuous and staunch leadership.

Today, the electrical distributing industry, represented by NAED, is responsible for a vast proportion of the nation's annual sales volume of electrical construction materials and appliances — almost $6,000,000,000. It employs about 100,000 persons—and distributors maintain 88,000,000 feet of warehouse space necessary to the proper servicing of their dealers.

Executive Director Hooper has officially assumed his duties at NAED's New York Headquarters, 290 Madison Ave.

New edition of Residential Wiring Handbook published

PUBLICATION of a new edition of the Residential Wiring Handbook is announced by the Industry Committee on Interior Wiring Design.

Completely revised by the Committee the new Handbook supersedes the 1946 edition, and raises the standard for wiring adequacy to a minimum of 100 amperes for service entrance capacity in all residential housing of 3,000 square feet of floor area or less. In addition to individual equipment circuits, at least one 3-wire general appliance circuit appears as a standard, and 3-wire branch circuits with split-wired receptacles are recommended for living room and bedrooms.

The revisions of the new Handbook represent the first change since 1946 in adequacy standards which are advocated nationally by the National Adequate Wiring Bureau and by 75 local bureaus which certify the wiring in new housing, and its appearance closely follows a decision of the National Association of Home Builders to adopt on a voluntary basis the 100-ampere service entrance.

Changes in the design of today's new homes and in the living habits of their buyers are reflected in the new standards. The Handbook premises its wiring design standards and recommendations on the one-story, open floor plan house with multi-purpose rooms. The standards are applicable equally, however, to the two-story or multiple-family dwelling and in the rewiring of older homes.

Factors taken into account by the Industry Wiring Committee in preparation of the Handbook were: the now widely accepted role of air conditioning in all classes of housing; the need for added individual circuits for numerous laundry and kitchen appliances in homes where the income level is modest, but where the demand for and supply of new housing is greatest; the probability of continued rapid increase of demand

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- UNBELIEVABLE NEW BEAUTY
- DISTINCTIVE DESIGN
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* **FLAME-PROOF** — Bronco 60 Certified bears the flame-proof approval number P116BM of the United States and Pennsylvania Bureaus of Mines.

* **PROOF OF CONTENTS**—Jacket is *certified* by a registered professional engineer to contain not less than 60% Neoprene by weight.

* **PROOF IS BRANDED**—"...60% Neoprene *by weight*..." is vulcanized into the jacket along with type, size, number of conductors, voltage, and "P116BM" every two feet.

* **OIL-PROOF**—The rich Neoprene jacket of Bronco 60 Certified will not swell and crack when doused in oil.

* **OZONE-PROOF** — Around electric motors and generators Bronco 60 Certified resists attack of ozone.

* **SUN-PROOF**—Rays of the sun can't break it down. In fact, Bronco 60 Certified is proof against all of rubber's natural enemies.

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READER SERVICE

The editorial and business staff of **Electrical South** is eager to serve you. One way in which we can help you is to make it easy for you to draw upon the wealth of technical and promotional material available from manufacturers.

In the accompanying pages are the descriptions of scores of useful catalogs, application information booklets, and technical publications. These are available without charge.

Check over the list of publications available, circle the numbers of the ones you need, and mail the coupon to us with your name, title, company and address plainly written. We will tell each manufacturer to send directly to you the information you want.

on home electrical systems as new equipment comes onto the market.

Summarizing the latest authoritative experience of the electrical and building industries on wiring systems adequate for present and future needs in the home, the new Handbook, like its predecessor, should be of substantial aid to architects, engineers, builders, contractors, lending institutions, and other organizations concerned with home building and planning. Prospective home owners and those now planning remodelling of their present homes should find practical, efficient wiring systems, with both floor plans and text easily understood by men with no technical experience. However, the Handbook emphasizes that its purpose is to show how to plan wiring system, and not how to make the actual installation.

Sponsoring organizations of the Residential Wiring Handbook are: American Home Lighting Institute, Edison Electric Institute, International Association of Electrical Inspectors, National Association of Home Builders, National Association of Electrical Distributors, National Electrical Contractors Association, National Electrical Manufacturers Association and Radio, Electronics and Television Manufacturers Association.

Sarasota hails Jubilee with new street lights

AMONG THE MANY special events hailing 1954 as Light's Diamond Jubilee, one which has attracted national attention was held in Sarasota, Fla., on October 21st. This event was signalized by the inauguration of a new fluorescent street lighting system said by some electrical engineers to be the most modern installation of its kind in Florida.

Turning on the new lights in Sarasota was cause for a civic celebration which had state-wide repercussions. Chosen on the evening of October 21—under the new street lights, of course — was "Florida's Queen of Light," who was selected by a panel of nationally known judges from beauty contest entries from all over the state.

In addition there was a contest to select "Miss 1879," judged on quality of costume depicting the era 75 years ago when Thomas A. Edison lighted his first lamp.

There were acts from the famous Sarasota High School Sailor Circus, described recently by the *Saturday Evening Post* as "the most amazing show put on by any public school in America."

Sarasota's elder statesman, 80-year-old A. B. Edwards, the city's first mayor, turned off the old lights at 7:30 p. m. After a brief interval of total darkness, the new lights were switched on by Ben H. Hopkins, III, 75 years younger than Mr. Edwards and the son of Sarasota's present Mayor.

In addition there were band music, a jitter-bug contest, parade of antique automobiles and dancing in the street as Sarasota took another long step forward in its program of modernization and civic progress.

The celebration tied in with national observance of Light's Diamond Jubilee, which was climaxed on Sunday, October 24, with a two-hour television program, produced by David O. Selznick, over the combined TV networks of the United States. October 21, date of the Sarasota celebration, was the actual 75th anniversary date of Edison's discovery.

No motor saturation seen for near future

WE WILL BE NEARING the 22nd century, approximately 140 years from now, before we begin to approach the market saturation point for fractional horsepower motors at the industry's present rate of production, a General Electric executive predicted recently. This does not include the opening of a single new market, he added.

On the occasion of the company's production of its 100 millionth fractional horsepower motor, Lisle D. Hodell, general manager of G-E's General Purpose Component Motor Dept., labeled as unrealistic the 'prophets of doom' who talk about saturating the market for motors and appliances in the near future.

The industry's present production of approximately 44 million units per year is barely adequate, he said, "since most of that number are immediately absorbed by appliances in new houses, replacements, and general industrial use. Relatively few remain to be used in appliances sold to new consumers and for broader new uses in industry," he said.

The average American home now has six fractional horsepower motors in it, usually including one each in the refrigerator, vacuum cleaner, mixer, and fans, and one or more in the washing machine and furnace he said. To add only one more motor per home will require eight years at present production rates, he said.

The modern electrified home will soon have approximately 16 motors, and many will include more than 25 fractional horsepower motors by 1965, he said. To raise the national average to 23, which is the theoretical saturation point for only the most popular appliances now on the market, would require approximately 140 years, he said. This figure does not even take into account new markets and new applications for these motors, he pointed out.

On the occasion of the production of the 100 millionth General Electric fractional horsepower motor, Lisle D. Hodell, general manager of the company's General Purpose Component Motor Dept., pointed out that it will take 140 years at present production rates before the industry begins to approach the saturation point for these motors.

New uses for motors being developed every year will in all probability soon carry this estimate far beyond 140 years, he said. For example, three appliances relatively unknown ten years ago—air conditioners, home freezers, and clothes dryers—already take approximately seven per cent of the fractional horsepower industry's entire production, yet none of them has passed the 15 per cent saturation point, he said.

Wilkes retires, Welsh named Southwestern head

FRANK M. WILKES, a veteran of 46 years in the electric business, has retired as president of Southwestern Gas and Electric Co.,

F. M. Wilkes

Shreveport, La., and has become chairman of the board of directors of the company. As chairman of the board of Southwestern, Mr.

J. R. Welsh

Wilkes will serve the company in an advisory capacity.

Mr. Wilkes came to Southwestern in 1940 as vice-president and general manager and was named president in 1942. From 1923 to 1940 he had been an executive with Arkansas Power and Light Co., serving as vice-president and general manager when he resigned to join Southwestern.

J. Robert Welsh has been named president of Southwestern to replace Mr. Wilkes. Mr. Welsh has been a top executive with the Louisiana utility for the past 10 years. He began his employment with the company in 1940, as superintendent of power. In January, 1945, he was named superintendent of operations. In 1948, he was named a member of the board of directors, and was named vice-president in 1949. Early this year he was named vice-president and general manager, from which position he was advanced to the presidency.

The new Southwestern president is a member of the board of directors of the National Association of Electric Companies, and also is chairman of the operating committee of the Southwest Power Pool.

Oklahoma utilities hold district conferences

THE ELECRIC LIGHT and Power Division of the Oklahoma Utilities Association recently held a Western District conference at Duncan, Okla., and an Eastern District conference at Ada, Okla., according to an announcement by Kate A. Niblack, secretary of the association.

Programs for the two district meetings, which were held on succeeding days, were essentially the same. Walter B. Gesell, vice-president, Oklahoma Gas and Electric Co., Ada, addressed both groups; Harry W. Pitzer, vice-president, Public Service Company of Oklahoma, Chickasha, spoke on the subject, "The Government's National Power Policy"; and W. R. Wolfe, vice-president, Oklahoma Gas and Electric Co., Oklahoma City, used "Light's Diamond Jubilee" as the subject of his address.

Afternoon sessions at both meetings heard addresses by M. L. Powers, director, Business and In-

Statement of Ownership

Statement of the ownership, management, and circulation required by the Act of Congress of August 24, 1912, as amended by the acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233), of ELECTRICAL SOUTH, published monthly at Charlotte, N. C., for October 1, 1954.

The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, W. R. C. Smith Publishing Company, Atlanta, Georgia; Editor, Carl W. Evans, Atlanta, Georgia, and Business Manager, Frank P. Bell, Atlanta, Georgia.

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The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

Frank P. Bell,
Business Manager

Sworn to and subscribed before me this 1st day of October, 1954.

Seba J. Jones

Notary Public, Georgia State at Large. My Commission Expires Feb. 23, 1958.

would your customer turn down a savings of $4,000 on a $40,000 lighting expenditure?

Your customers can enjoy the benefits of the *finest* lighting money can buy and effect really substantial savings at the same time, simply by buying the *right* lighting fixture. Time and again, the better design and efficiency of Smithcraft Fluorescent Fixtures result in *fewer units* to produce recommended lighting levels.

Here's an actual case history of how a Pennsylvania department store saved 10% in initial costs and 10% in operating costs . . . or approximately $4000 on a ten-year $40,000 expenditure.

Before re-lighting, a complete survey was made and exact lighting requirements were established. To meet these requirements, Smithcraft units and units of several nationally-known top quality manufacturers were subjected to an exhaustive *comparative* analysis. Here are the results:

10% *FEWER UNITS REQUIRED*

Number of units required to achieve recommended lighting levels: ..... Smithcraft — **270**
2nd Best Fixture — 297
3rd Best Fixture — 339

10% *LESS INSTALLATION COST*

Proportionately less labor and materials were required to install the 270 Smithcraft units than the 297 units of the nearest competitor.

10% *FEWER LAMPS*

(Initial & Replacement)

Lamps required: ..... Smithcraft — **706**
2nd Best Fixture — 776
3rd Best Fixture — 914

Recommended practice is to replace lamps every 18 months—a continuing 10% savings.

10% *LESS POWER CONSUMPTION*

Required wattage: ..... Smithcraft: **51.3** kilowatts
2nd Best Fixture: 56.3 kilowatts
3rd Best Fixture: 64.8 kilowatts

Whether you're lighting a store, office, school, factory, or institution, it pays to *buy lighting — not fixtures.* Invest in Smithcraft — America's Finest Fluorescent Lighting Equipment.

PHOTOGRAPH SHOWS AN INTERESTING PATTERN ARRANGEMENT OF THE SMITHCRAFT LOUVERLITE SLIMLINE IN THE PENNA. DEPT. STORE DESCRIBED ABOVE.

BUY LIGHTING — NOT FIXTURES. INVEST IN AMERICA'S FINEST FLUORESCENT LIGHTING by
Smithcraft
LIGHTING DIVISION
CHELSEA 50, MASSACHUSETTS

dustrial Services, University of Oklahoma, Norman, and James G. Roberts, manager, Southwestern Division, U. S. Chamber of Commerce, Dallas, Texas. Subject of Mr. Powers' address was "A Supervisor's Responsibility to His Men" and Mr. Roberts', "What Are You Going To Do About It?"

A general discussion period and a report by various association committees were features of both meetings.

Officers of the Eastern District are Emil Wyatt, Oklahoma Gas and Electric Co., Ada, chairman and T. P. Gilmer, Public Service Company of Oklahoma, Okmulgee, secretary. Ray L. Rice, Public Service Company of Oklahoma, Duncan, and J. L. Farmer, Oklahoma Gas and Electric Co., Norman, are chairman and secretary, respectively, of the Western District. Walter B. Gesell, is chairman of the Oklahoma Utilities Association.

G-E offers Christmas Lighting Contest book

MORE THAN 3000 COPIES of a new how-to book on Christmas Lighting Contest procedure, bearing the imprint of the U. S. Junior Chamber of Commerce, have been distributed by that organization to as many local chapters.

Supplementing this mailing, 5000 additional copies of the portfolio have been distributed by General Electric's Lamp Division to civic-minded organizations coast to coast. Included in the portfolio are entry blanks, rules for the judges, sample news releases, and an announcement of the division's $5000 Christmas Lighting contest, which is being staged this year as a special salute to Light's Diamond Jubilee.

Readers desiring copies of this booklet (No. 8-4101-3) should address their request to Inquiry Bureau, General Electric Lamp Division, Nela Park, Cleveland 12, Ohio.

Milner named Furnas Electric sales agent

APPOINTMENT of W. J. Milner & Co., 148 Walker St., S. W., Atlanta, Ga., as one of their sales representatives has been announced by Furnas Electric Co., Batavia, Ill., manufacturers of electric motor controls.

Milner's territory includes Louisiana, except the parishes of Caddo, DeSoto, Sabine, Vernon, Beauregard, Calcasieu, and Cameron; Arkansas, except the counties of Benton, Carroll, Boone, Marion, Washington, Madison, Newton, and Searcy; Tennessee, west of and including the counties Henry, Benton, Decatur, and Hardin; Alabama and Mississippi.

The Atlanta firm also operates sales offices in Little Rock, Ark., Nashville, Tenn., and New Orleans, La. The Milner organization is experienced in the sale of electric motor controls, and technically capable of assisting with motor control problems.

Berko begins largest newspaper campaign

An advertising schedule, reported to be the largest campaign ever run for electric radiant heating, has been inaugurated in over 100 newspapers by Berko Electric Manufacturing Corp., Queens Village, N. Y. Insertions are scheduled to run right through the heating season.

Berko reports that since their policy is to sell only through the electrical trade, every advertisement will feature "Call your electrical contractor." The ads will feature the fact that Berko panels can be used for auxiliary as well as whole house heating.

The firm states that the electric heating industry "has grown out of its swaddling clothes," and estimates that sales this year will exceed $23,000,000.

In addition to the newspaper campaign, Berko is using national magazine space supplemented by trade paper advertising.

Pittsburgh Reflector merges with Holden

ANNOUNCEMENT has been made by Pittsburgh Reflector Co., through its president, H. C. Zinsmeister, of the merging of his company with Holden Lighting Manufacturers Ltd., of Toronto, Ontario, Canada.

This move was made, according to Mr. Zinsmeister, to strengthen the position of both companies in their particular marketing areas. In the United States, Pittsburgh Reflector is recognized as one of the leading manufacturers of fluorescent and incandescent lighting equipment for the commercial, industrial and institutional markets. In Canada, Holden Lighting is well known for its equipment used for lighting churches, restaurants, theatres, offices, schools and similar institutions.

Through an interchange of designs and production know-how both companies will be able to expand greatly the types and varieties of lighting equipment they offer, the announcement stated.

P. H. Greene is president, and Ralph C. Johnson is vice-president of Holden. Other officers of Pittsburgh Reflector are: J. C. Sullivan, executive vice-president; R. C. Zinsmeister, plant manager; and Francis R. Harbison, secretary.

Okonite changes tape distributor policy

IMPORTANT CHANGES in the distributor policy of their Tape Department have been announced by the Okonite Company, Passaic, N. J. As of October 1, 1954, all Okonite quality electrical tapes—Okonite, Manson, Okoprene and Okolite—as well as Panther and Dragon Tapes, will be exclusively sold through selected distributors.

Basic to this policy is a liberal distributor plan which provides increased profit margins, protection against loss through price changes, obsolescence and inventory problems, as well as the *total elimination of direct sales*. Stepped-up sales promotion and advertising campaigns are further features of Okonite's modernized distributor plan.

Still other features of the plan are new unit packages of the various tapes, which are expected to contribute to greater sales volume and easier handling, as well as a single, concise, easy-to-use price sheet covering all materials.

Bradford M. Harrington, head of the Okonite Tape Department, states that this distributor and packaging plan is revolutionary in the tape field and will result in substantially better service to the thousands of Okonite tape customers.

Federal Pacific acquires Gardner Electric Company

FEDERAL PACIFIC Electric Co., Newark, N. J., one of the nation's top manufacturers of electrical distribution and control equipment, has acquired the Gardner Electric Manufacturing Co., San Francisco, Calif., according to Thomas M. Cole, F-P executive vice-president. This acquisition adds a transformer plant to the company's present facilities.

Federal Pacific has also recently completed new buildings at the Newark, N. J., plant, and has announced other important improvements in existing facilities including the installation of new and modern machinery. The company's recently completed 3½ million dollar switchgear plant in Scranton, Pa., is now on a limited production schedule, and will be officially opened this fall.

On November 1st
our printer will deliver
to us a new and larger
edition of a cataloguing
of our complete line of
P&S Turnlok® and Polarized
plugs and receptacles.

Would you like to receive a copy? (no charge of course)

THE FORM BELOW IS FOR YOUR CONVENIENCE

PASS & SEYMOUR, INC. • SYRACUSE 9, N. Y.

Yes Please send your new catalog of P&S Turnlok and Polarized plugs and receptacles (no charge, of course).

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Dates Ahead

National Farm Electrification Conference, 1954 Conference, Van Curler Hotel, Schenectady, N. Y., Nov. 18-19, 1954.

National Association of Lighting Maintenance Contractors, Southeastern Meeting, Georgia Hotel, Atlanta, Ga., Nov. 22-23, 1954.

Edison Electric Institute, Wiring and Specifications Committee, St. Louis, Mo., Nov. 29-30, 1954.

Edison Electric Institute, Commercial Cooking and Water Heating Committee, Jefferson Hilton Hotel, St. Louis, Mo., Dec. 8-10, 1954.

American Institute of Electrical Engineers, Winter General Meeting, Hotel Statler, New York, N. Y., Jan. 31-Feb. 4, 1955.

Southeastern Electrical Wholesalers Association, Fifth Annual Industry Day Meeting, Atlanta Biltmore Hotel, Atlanta, Ga., Feb. 2-4, 1955. M. L. Tice, Exec. Vice-Pres., P. O. Box 176, Ben Hill, Ga., Tel.: Atlanta Amherst 6182.

Edison Electric Institute, Transmission and Distribution Committee, Shoreham Hotel, Washington, D. C., Feb. 10-11, 1955.

Public Utility Buyers' Group, National Association of Purchasing Agents, 24th annual Mid-Winter Conference, the Shamrock Hotel, Houston, Tex., Feb. 13-15, 1955.

Southern Safety Conference and Exposition, Jung Hotel, New Orleans, La., Feb. 27-28, March 1, 1955. W. L. Groth, Exec. Dir., P. O. Box 8927, Richmond 25, Va.

Oklahoma Utilities Association, Annual Convention, Mayo Hotel, Tulsa, Okla., March 24-25, 1955.

American Institute of Electrical Engineers, Southern District Meeting, St. Petersburg, Fla., April 13-15, 1955.

American Institute of Electrical Engineers, Electric Heating Conference, LaSalle Hotel, Chicago, May 10-11, 1955.

Copper actions announced by Secretary of Commerce

SECRETARY OF COMMERCE Sinclair Weeks has announced twin actions by the Department of Commerce to alleviate the current shortage in domestic copper supplies and to maintain employment in domestic copper-consuming plants.

Government-accumulated copper released by the Office of Defense Mobilization will be distributed by the General Services Administration on recommendations of the Copper Division of the Business and Defense Services Administration, U. S. Department of Commerce.

Secretary Weeks said that the copper obtained under expansion programs authorized by the Defense Production Act was insufficient to meet, in full, current industrial requirements in copper consuming industries.

The distribution of the copper accumulated in the DPA inventory will be limited to those companies facing shutdowns for lack of the metal. Requests from such companies should be made directly to the Copper Division of BDSA. The released copper is from the DPA inventory, not from the national stockpile.

Bradley appointed Cope representative

ANNOUNCEMENT of the appointment of the Bradley Co., Philadelphia, Pa., as sales representatives for their complete line of cable trough and cable installation equipment has been made by T. J. Cope, also of Philadelphia.

The Bradley territory will include the State of Delaware, Eastern Pennsylvania, and Southern New Jersey.

Gulf States appointed Paine representatives

ANNOUNCEMENT of the appointment of Gulf Sales Agency, 500 Magazine St., New Orleans, La., as their sales representatives for the states of Louisiana, Mississippi and Western Tennessee, has been announced by the Paine Co., Addison, Ill. Gulf States will stock a complete supply of the Paine line of hanging and fastening devices.

Ben Patton, Norm White, Bill Robinson and Becker Drane of the Gulf States Agency will cover the assigned territory for Paine.

Griffin & Griffin get Slater 'Lifetime' line

APPOINTMENT of Griffin & Griffin, 931 W. Peachtree St., N. W., Atlanta, Ga., as their representative for the states of Georgia and Alabama has been announced by Slater Electric & Manufacturing Co., Woodside, N. Y. The Atlanta firm will maintain a complete warehouse stock of the Slater "Lifetime" wiring device line to better service distributors and contractors in their territory.

News about people

The appointment of **Richard C. Piper** as sales manager of **Markel Electric Products, Inc.,** Buffalo, N. Y., was announced recently by **Joseph Markel,** president.

Mr. Piper has been sales manager of LaSalle Products, Inc., an affiliate of Markel, since 1949.

As sales manager of Markel Electric Products, Inc., Mr. Piper will be in charge of the development and promotion of new Markel-Maid Products — including the new Markel Electric Fry-Pan, Cooker and Warmette. In addition, he will direct national sales of Markel Electric Portable Heetaires and Built-In Heetaires.

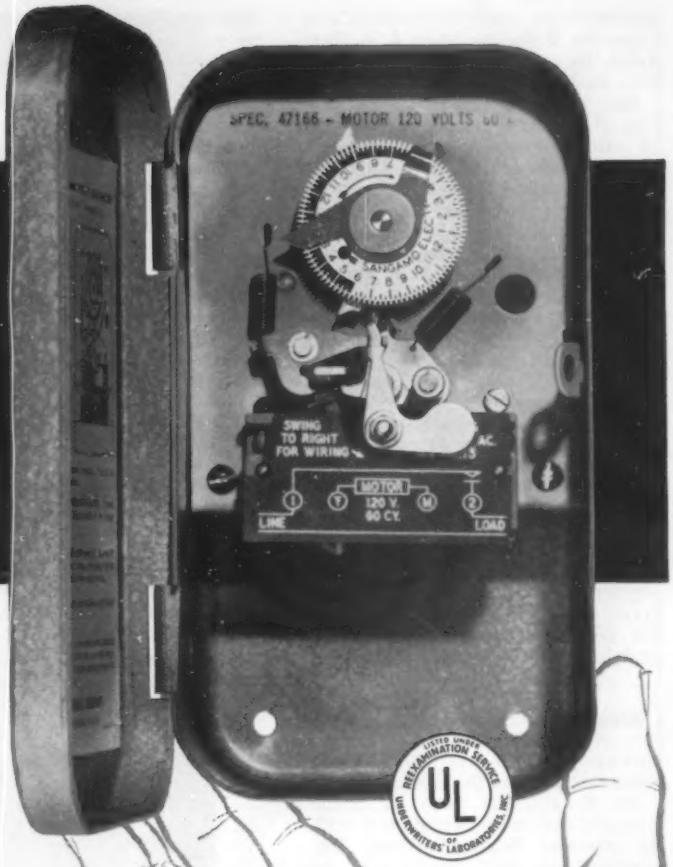
Robert E. Deal has been appointed to the position of apparatus engineer in **Line Material Company's** South Atlantic division. A distribution engineer for several years after his graduation from the University of Tennessee, Mr. Deal is available to assist customers with apparatus application problems in the states of North Carolina, South Carolina, Georgia, and Florida. He has his headquarters in L-M's Atlanta office.

Mr. Deal replaces **Harry F. Naramore** who has been transferred to L-M's East Central division. Naramore is located in L-M's Cleveland office and is available for customer consulations in Ohio, Michigan, Indiana, and Kentucky. He assumed the apparatus engineering duties of **George W. Cooper** who was recently promoted to manager of protective and switching equipment sales.

The **Houston Lighting & Power Company** board of directors have

get the
<u>whole</u> Time Switch story

It's Profitable to install a SANGAMO TIME SWITCH



You never get through paying for <u>some</u> time switches.
Even if your books have been closed on a time switch job for some time—if you have to make just one service call, you've lost your profit on that switch.

With the Sangamo Type B Time Switch, there's . . .
NO SERVICE CALL HEADACHE—The Sangamo Type B is powered by the famous Sangamo 450 r. p. m. hysteresis motor. This motor is lubricated for life, operates quietly, and keeps working under wide temperature variations.

Minimum-arc design, solid silver contacts and special wear-resistant bearings at points of greatest wear give the Sangamo Type B Time Switch longer service life.

THE SANGAMO TYPE B IS EASY TO INSTALL—
You save on the Sangamo Type B—and profit, too—because it's easy to install. Almost half the inside space is available for fast, convenient wiring and there are four handy, multiple knockouts, ½" to ¾" in diameter.

You can take pride in the installation of a Sangamo Time Switch because it is the finest time switch on the market. Your reputation for thorough, conscientious work is safe-guarded.

IF YOU'RE LOOKING FOR THE BEST IN A HEAVY-DUTY TIME SWITCH...

For automatic control on installations that require more than a single-pole, single-throw switch can offer—choose a Sangamo Heavy Duty Time Switch. This model is available with an *Automatic Carryover* which assures continued operation for up to 10 hours in the event of a power failure . . . an *Omitting Device* which can be set to omit operations for one or more 24-hour periods. Or you can order the heavy-duty switch with an *Astronomic Dial* which automatically controls the switching schedule in accordance with the sunrise and sunset.

✻ Your electrical wholesaler can furnish you with all types of dependable Sangamo Time Switches. Insist on Sangamo—for the best in time switch performance.

ST54-7

SANGAMO ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS

elected to the office of secretary and treasurer of the company **J. A. Bordelon.** He succeeds **Martin B. Pigott,** who died September 15.

Mr. Bordelon brings to his new post 27 years experience in the fields of utility accounting and finance. Born February, 1903, in Cottonport, La., he attended public schools in New Orleans, and in 1927 became traveling auditor with the American Utilities Co., Harrisburg, Pa. From 1929 to 1943 he served in various administrative and executive capacities with a group of operating companies.

Entering the employ of Houston Lighting & Power July 1, 1943, as special accountant, he rose in 1946 to chief plant accountant in charge of property records. In January, 1954, he was made assistant to the comptroller, in which capacity he has served to the present time.

As secretary and treasurer, Mr. Bordelon will have an active part in the financing involved in the light company's current expansion program, which will see the area's electric generating resources reach almost 1,500,000 kilowatts by 1956.

Alvah R. Small, retired vice-chairman of **Underwriters' Laboratories,** died early in October at his home in Pompano, Fla., at the age of 71.

Mr. Small was born in South Portland, Maine on December 7, 1882. He attended South Portland Elementary and High School and received his B.S. Degree in Civil Engineering from the University of

A. R. Small

Maine in 1904. Because of a paper he prepared on concrete blocks he received a degree of Civil Engineering from the University of Maine in 1929.

Upon graduating from the University of Maine, he joined the staff of the New York Fire Insurance Exchange.

In 1906 he joined the staff of Underwriters' Laboratories, in Chicago, as an assistant electrical engineer. In 1910 he formed the Label Service Department which was charged with the factory follow-up inspection of listed products. In 1916 he was promoted to vice-president. In 1924 he was transferred to the Laboratories' office in New York. In January 1935 he was elected president of Underwriters' Laboratories and transferred to the main office and testing station in Chicago. In June of 1948 he relinquished active control of the Laboratories' work and was made vice-chairman of the Board of Trustees.

Although a past president of the National Fire Protection Association and active in many committees of the N.F.P.A., he was probably more widely known as chairman of the Electrical Committee of the N.F.P.A.

F. E. Warner has been named district manager in Alabama, Georgia and the Tennessee territory for **Fasco Industries, Inc.,** Rochester, N. Y., according to a recent announcement by **C. W. McLaughlin,** Fasco sales manager.

Mr. Warner will be assisted by **Gary Morgan,** a native of Georgia,

F. E. Warner

in the sales of the company's line of ventilating exhaust fans and air circulating fans in the three states named.

Until this recent appointment, Mr. Warner was in the sales department of Fasco Industries, occupied with sales-liaison work. He served with the Air Force in World War II and was graduated from the University of Rochester.

Mr. Warner and Mr. Morgan will use Decatur, Ga., as headquarters for the new Fasco sales organization.

Walter G. McKie, general sales manager of Rochester Gas and Electric Corp., Rochester, N. Y., has been appointed chairman of the **Home Lighting Education Committee of the Better Light Better Sight Bureau,** it was announced by **H. A. Stroud,** bureau chairman.

Mr. McKie has been employed with Rochester Gas and Electric in various capacities since 1922, with the exception of five years, from 1929-34, when he was manager of lighting sales for the Metropolitan Edison Co., Reading, Pa.

A graduate of the University of Michigan with an electrical engineering degree, Mr. McKie was associated with the Better Light Better Sight program at Rochester Gas and Electric as far back as 1934, when the movement first started. After having been promotion manager, assistant manager and finally manager of domestic sales, he became general sales manager of Rochester G and E early in 1953.

T. E. Curtis, widely known in the electric utility and electrical manufacturing industries, has been appointed chief engineer of protective devices and power switching equipment of the **A. B. Chance Co.,** Centralia, Mo.

Mr. Curtis has been with the Southern States Equipment Corp.,

T. E. Curtis

Hampton, Ga., for the past 15 years and was chief engineer of the Electrical Division of that company for several years before joining the Chance organization. He had previously been employed with the Tennessee Electric Power Co., and the Alabama State Highway Dept.

An electrical engineering graduate of Alabama Polytechnic Institute, he has been active in NEMA and A.I.E.E. activities. He is a member of the National Technical Committee of the A.I.E.E., the A.I.E.E. subcommittee for preparation of standards on switches, fuses and insulators, and the NEMA Committee to prepare standards for cutouts and power fuses.

Two personnel changes in the electrical and research fields were announced recently by **Aluminum Company of America,** Pittsburgh, Pa.

Joel Tompkins has been transferred from his post as chief of the electrical division of the Aluminum Research Laboratories at Massena, N. Y., to the central electrical engineering department in Pittsburgh.

Hazen E. House, who was senior

wire delivers POWER
we deliver WIRE

Write, wire, or phone Chattanooga 7-3325 when you need Distribution and Transmission Conductors.

- ACSR Conductors
- ACSR Accessories
- Galvanized Steel Strand
- Bare Copper Wires and Cables
- Weatherproof Wire (Aluminum or Copper, Neoprene or Type URC-Neoprene Triplex)

incidentally,

our SERVICE unreels as fast and smoothly as our WIRE.

IN THE HEART OF THE SOUTH

Southern Electrical Corporation

CHATTANOOGA, TENNESSEE

staff engineer of the power division at the company's works in Alcoa, Tenn., will succeed Mr. Tompkins in the Massena post.

Mr. Tompkins received his degree in electrical engineering in 1926 from the Massachusetts Institute of Technology. The following year he received his master's degree from the same school.

He joined the Nantahala Power & Light Co., an Alcoa subsidiary, in 1930. From that time until 1942 he worked in the electrical field in various Alcoa divisions.

In 1948, Mr. Tompkins was named to the chief electrical post in ARL stationed at Massena works, a position he held until his recent promotion.

Mr. House was born in Knoxville, Tenn., and attended the University of Tennessee. He was graduated from Massachusetts Institute of Technology with a bachelor's degree in electrical engineering in 1929. He received his master's degree from MIT in 1932.

In 1940, he joined Alcoa as an electrical engineer at the Alcoa power division, Alcoa, Tenn., where he remained until his promotion to the Massena post.

W. E. Mitchell, former president of the **Georgia Power Co.**, Atlanta, has been named chevalier in the National Order of the French Legion of Honor.

The cross of the Legion of Honor was presented to him recently at his residence in Atlanta by Consul General Guy de Schompre, of New Orleans.

The distinction was bestowed upon Mr. Mitchell in recognition of his "constant and active friendship" to France as a U. S. government appointee on the special mission to aid the restoration of French industry after World War II.

Mr. Mitchell specialized in aiding the renovation of electric power, iron and steel, and the coal industry in France.

M. H. Lovelady, chief engineer of **Central Power and Light Co.**, was elected a vice-president of the organization by the board of directors in Corpus Christi, Texas, recently.

Mr. Lovelady retains his position as chief engineer in addition to his new duties as vice-president. His election fills a vice-presidential vacancy which occurred when **J. L. Bates**, formerly vice-president and general manager, was promoted to president and general manager of CPL.

A native of Tyler, Mr. Lovelady has been a member of the CPL organization since 1926. Prior to that time he was employed by the Texas Power and Light Co., in Dallas. He served CPL in various engineering capacities until 1943, when he became assistant chief engineer. He was promoted to chief engineer in 1952.

Mr. Lovelady is a member of the American Institute of Electrical Engineers and is a registered professional engineer in the state of Texas. His professional activities include service on various committees of the AIEE, the Edison Electric Institute and the South Texas Electrical Systems.

Henly M. Hilburn has been appointed assistant sales manager for the Commercial Products Division and **Allan B. Chadrow** assistant sales manager of the Consumer

H. M. Hilburn

Products Division of the **O. A. Sutton Corp.**, Wichita, Kansas, according to a recent announcement by **O. A. Sutton**, president and chairman of the board. Mr. Hilburn joined Sutton in 1950, and has been district sales manager of the Houston, Texas, area. Mr. Chadrow joined the company in 1948 and has been regional sales manager for the Chicago area.

Alan Chadrow

Before joining the Sutton Corp., Mr. Hilburn was employed by Westinghouse as branch appliance sales manager in the Wichita area. He will work with **Wesley Brient**, sales manager, in the sale and merchandising of Vornado central type air conditioners from two to ten ton capacity.

In his new position, Mr. Chadrow will work with **Fred Kaths**, sales manager, in the sale and merchandising of Vornado room air conditioners and air circulators. Previous to joining Sutton, he was regional sales manager for the Raymond Rosen Co., Philadelphia.

At a recent meeting of the directors of **Braid Electric Co.**, Nashville, Tenn., **Ferrell D. Gregory** was elected a vice-president of that company.

Mr. Gregory, a veteran in the electrical field, joined Braid in 1947 following service with the U. S. Navy. He has been largely responsible for the development of the firm's REA and Municipal business.

Mr. Gregory attended the University of Tennessee and was for several years resident engineer of the Lafayette, Tenn., electrical co-operative, and later manager of the rural electrical co-operatives in Campbellsville and Somerset, Ky. He will be in charge of the electrical supply and electrical distribution departments of Braid Electric.

Walter D. Scott has been appointed manager of advertising and sales promotion for the **Westinghouse Lamp Division**, it was announced recently by **H. E. Plishker**, merchandise manager. Formerly assistant manager of the department, Mr. Scott succeeds **H. L. Niederauer**, who has joined the J. Walter Thompson advertising agency.

In his new position, Mr. Scott will be responsible for developing nationwide consumer and trade advertising programs, and for the preparation of sales aids for dealers' use in promoting Westinghouse lamp sales.

Mr. Scott was graduated from Columbia University in 1945. He immediately entered the advertising profession, and after three years in radio and industrial work, became associated with the McGraw-Hill Publishing Company in 1948. He joined the Westinghouse Lamp Division in 1949, and has been assistant advertising and sales promotion manager since 1951.

Don B. Potter, vice-president of the **Monongahela Power Co.**, Fairmont, W. Va., recently was elected to the post of administrative vice-president of the company, assuming with the title new duties.

Monongahela President **A. C. Spurr** announced that Mr. Potter will be responsible to him for all of the departments in the organization that previously had reported directly to the president. The action was taken at a meeting of the company's board of directors in New York.

At the same time the directors ap-

WHY YOUNGSTOWN BUCKEYE CONDUIT IS BETTER

Youngstown is the one manufacturer who makes rigid steel conduit from ore to finished product. This enables Youngstown to control the complete manufacturing process—your insurance that each length of "Buckeye" is made of top-grade steel.

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proved action that freed Vice-President **Eric C. Summers** for expanded responsibilities in his vice-presidential capacity. **Arnold L. Adams,** assistant comptroller, was elected to the office of comptroller, a position formerly held by Mr. Summers in addition to that of vice-president.

Mr. Spurr also announced the appointment of **Paul H. Sommer,** veteran manager of Monongahela's Morgantown division, as assistant to Vice-President Summers with the major assignment of co-ordinating the work of the company's seven divisions. **G. Ellis Vest** was named as manager of the Morgantown division.

President **R. Paul Smith** of the **Potomac Edison System** has announced the resignation of **George S. Humphrey,** vice-president of the system. Mr. Humphrey will continue to serve as a director of the company and chairman of the West Penn Electric System engineering and construction committee pending the completion of a number of large power plant projects throughout the system.

Mr. Humphrey had served as vice-president in charge of operations and engineering for the Potomac Edison System since 1928.

President Smith also announced the election of **Eugene Gordon, Henry H. Swartzman,** and **S. Sydney Bradford** as vice-presidents of the company following a recent meeting of the board of directors.

Mr. Gordon will serve as vice-president in charge of power stations and power generation; Mr. Swartzman will be operating vice-president; and Mr. Bradford will hold the post of commercial vice-president.

Mr. Gordon has been associated with the power department since 1923. He is presently serving on a temporary loan basis with the West Penn Power Co., as acting manager of their power department.

Potomac Edison's new Operating Vice-President H. H. Swartzman began his career with the company as retail sales manager in Cumberland, Md., in 1928. In 1951, he was elected to the post of assistant vice-president and chief engineer and held this post until assuming duties as operating manager and chief engineer.

Commercial Vice-President S. S. Bradford has been associated with Potomac Edison's promotional department since 1934 when he took the post of promotional manager. He held this post until 1953 when he was made general commercial manager, the post he held at the time of his recent promotion.

Harold J. Lutton has been named general sales manager of the apparatus and supply division, **Westinghouse Electric Supply Co.,** it was announced in New York City recently by **John F. Myers,** president. Mr. Lutton will make his headquarters at the firm's national executive offices at 40 Wall St.

In assuming this newly-created post, Mr. Lutton will be responsible for sales programs, plans and policies for the firm's 17 districts and 117 field branches in 46 states. He will report to **M. P. Nickerson,** vice-president in charge of the apparatus and supply division.

A veteran of 15 years with Westinghouse, Mr. Lutton is a graduate of the University of Nebraska with a Bachelor of Science degree. He joined the supply company in October, 1939 as a sales trainee. A year later, he became a salesman at the Omaha branch, but left shortly thereafter for service in the U. S. Army. After separation as a captain in 1946, he rejoined the supply firm as a salesman at Lincoln, Neb. In 1948, he became western district sales manager at Omaha, and four years later became district manager.

Charles L. Drummond, meter superintendent of the Georgia Power Co., Atlanta, has resigned to accept a position with the **Sangamo Electric Co.,** Springfield, Ill. He has been succeeded by **Clyde E. Lancaster,** former meter laboratory supervisor. **R. C. Ashe** has succeeded Mr. Lancaster as supervisor of the meter laboratory.

Mr. Drummond first became associated with the company in October, 1929, while a co-op student at Georgia Tech. Immediately following his graduation from Tech in 1935, he went to work in the meter department in Atlanta.

Following five years of service in the U. S. Army during World War II, Mr. Drummond rejoined Georgia Power in January, 1946, and was made supervisor of the meter laboratory. He had been meter superintendent since April, 1951.

Mr. Lancaster, who also attended Georgia Tech, joined the power firm in September, 1923. He had been supervisor of the meter laboratory since April, 1951.

Mr. Ashe joined the firm in July, 1947, as student engineer in Augusta, following graduation from Georgia Tech. He also holds a law degree from Emory University and had been field engineer in the general office meter department since July, 1949, until his recent promotion.

Free bulletins

available to our readers

A new **four-page supplement to catalog 1-54** has been published by **Slater Electric & Manufacturing Co., Inc.,** 56th St. and 37th Ave., Woodside, N. Y. This new section lists 39 items which have been added to the Slater "Lifetime" wiring device line. Included are 20 amp two-wire, three-wire, and four-wire Slator lock devices, as well as 20A., 30A., and 50A., items. Armored caps, rubber caps and composition caps are also featured, as well as a range cap.

For your free copy, circle number B1101 *on the coupon on page* 63.

Copies of their Wiring Device News No. 62 and a consumer brochure, No. MCC754 pertaining to the **Multi-Control low voltage wiring system,** are available from the **Bryant Electric Co.,** Box D, Barnum Station, Bridgeport 2, Conn. This literature illustrates and completely describes the complete Bryant low voltage multi-control system.

For your free copy, circle number B1102 *on the coupon on page* 63.

A catalog sheet on their universal pressure type **adjustable terminal lugs** has been announced by **Krueger & Hudepohl,** 5 East Third St., Cincinnati 2, Ohio. The two-color folder illustrates and describes the complete K&H line, which consists of six sizes, from No. 14 to 1,000,000 CM.

For your free copy, circle number B1103 *on the coupon on page* 63.

Bulletin F, recently issued by the **Pittsburgh Reflector Co.,** 405 Oliver Bldg., Pittsburgh 22, Pa., will prove to be a useful handbook on lighting equipment for indirect lighting, interior spot lighting, strip lighting, and interior flood lighting. Also completely cataloged is accessory equipment for these applications, including louvers, roundels, wire guards and other accessories for achieving distinctive and proper lighting results.

A section of Bulletin F gives complete specifications and distribution data on silver-mirrored Permaflectors for indirect cove lighting. A second catalogs adjustable interior silver-mirrored Permaflector equipment used for highlighting, spot lighting, flood lighting, etc.

For your free copy, circle number B1104 *on the coupon on page* 63.

THE *Magazine*

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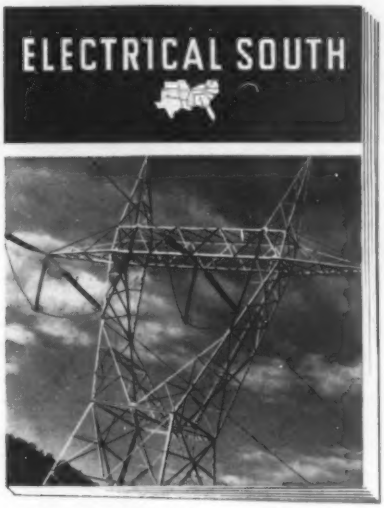

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The new **low-voltage wiring system** for the central and remote control of multiple circuits is described in a six-page bulletin available from the **Bryant Electric Co.**, Dept. L-263, Bridgeport 2, Conn.

The Bryant multi-control system offers the convenience of controlling lighting and appliances from any number of switching points. In addition, up to nine circuits may be controlled from a single location.

The bulletin illustrates the many places throughout the home where the new system saves time and steps. Outdoor as well as indoor installations are described.

A simplified wiring diagram is presented to explain the operation of the 24-volt system which controls the 125 volt power circuit.

Each of the component parts of the multi-control system are described and their operation as related to either the low or high voltage circuits is explained.

For your free copy, circle number B1105 *on the coupon on page* 63.

An attractive, colorful, **72-page catalog**, illustrating and describing, as well as giving full price information, on their complete line of connectors, crimp terminals, fabricated tubes, fuse clips, neutral bars, shading coils, stampings, and terminal blocks, is available from **Ilsco Copper Tube and Products, Inc.**, Cincinnati 27, Ohio.

For your free copy, circle number B1106 *on the coupon on page* 63.

Technical books

for the electrical man

Lighting for Color and Form

By Rollo Gillespie Williams, Pitman Publishing Corp., 2 West 45th St., New York 36, N. Y., 340 pages, illustrated, $8.50.

The eminence of Rollo Gillespie Williams on the subject of lighting must command attention from all concerned with the use of light in design, architecture, the dramatic arts, display and photography. His new book promises to become the standard authority on modern applications of lighting, drawn as it is from his wide practical experience and immense knowledge. His previous work on Stage Lighting has made a valuable contribution to the technical improvement of stage production. The present work has a wider reference and discusses the general uses of lighting.

This new book is divided into four parts, Part 1 covering the scientific principles underlying the whole subject, Part 2 the characteristics, details and control of applied color and directional lighting, Part 3 the formulation of principles and rules for the artistic use of light, shade and color, together with some thoughts of psychological aspects. Part 4 deals with the practical applications of the principles discussed in the previous parts in relation to display, architectural, photographic, state and studio, exterior and photochemical lighting. The book is fully illustrated.

Mr. Williams is a Member and Fellow of the Illuminating Engineering Societies of the United States and Great Britain respectively. He is famous on both sides of the Atlantic as a lighting designer and as the originator of numerous patents for lighting devices and techniques that have resulted in many new lighting systems. A leading authority of mobile color lighting, he is internationally known for his lectures and writings on the subject.

A Handbook of Small Business Finance

By Ralph B. Tower, Small Business Administration Management Series, No. 15, 30 cents. (Order from Superintendent of Documents, Washington 25, D. C.)

"The cold records of small business failures indicate that inexperienced management is much more damaging than lack of financial resources," according to this new booklet recently announced by Wendell B. Barnes, administrator of the Small Business Administration.

It is pointed out in the booklet that many small business operators place financial questions near the top of their list of management problems. Many claim that if the right combination of short-term and equity capital were readily available, managing a small firm would be vastly easier and much more profitable.

While such reasoning is probably true, this new booklet emphasizes that financing is only one of the many aspects of management; and adds that financing is often complicated by problems arising from inept or inexperienced handling of inventories, extending credit, buying raw materials, or estimating markets.

The Handbook, which was written for the Small Business Administration by Ralph B. Tower, Professor of Economics and Finance at West Virginia University, does not attempt to cover all phases of the complicated subject of business finance.

Its principal objective is twofold: To furnish inexperienced managers with basic information which help them understand better the financial operation of their businesses; and to aid small business operators in making use of the financial assistance available to them — particularly from local banks — and guide them in measuring the success of operations.

The Handbook discusses the importance of financial statements; financial management; ratios and turnover rates; banking relationships; term loans, accounts receivable and inventory financing, and the cash budget. It includes a list of some private venture capital corporations, and suggests methods for contacting them; and describes the Small Business Administration's lending program.

Formulas for Capacitance and Inductance

By Chester Snow, National Bureau of Standards Circular 544, 37 figures, 69 pages, 40 cents. (Order from the Government Printing Office, Washington 25, D. C.)

This collection of formulas contains some that are commonly used in electrical work and some that have been specially developed for precision work at the National Bureau of Standards.

Explicit formulas are given for the computation of the capacitance between conductors having a great variety of geometrical configurations, the inductance, both self- and mutual of circuits of various shapes, and the electrodynamic forces acting between coils when carrying current.

Formulas for skin effect and proximity effect in concentric cables and parallel wires are included. The formulas for the simpler configurations are given in terms of the elementary functions, whereas more complex shapes involve the use of Legendre polynominals, Legendre functions, and elliptic functions.

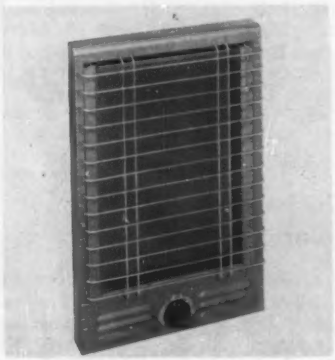
One section is devoted to a discussion of the relation between the Legendre and the elliptic functions.

New products

(For more information, use coupon below)

Berko announces panel for small room heating

ESPECIALLY DESIGNED for small rooms such as bathrooms, laundry and dressing rooms, which may not get sufficient heat from the central heating system, the new "Select-a-Temp Junior" electric radiant-heating glass panel has been announced



by Berko Electric Manufacturing Corp., 212-40 Jamaica Ave., Queens Village, N. Y.

Berko panels have a heating element which is not a grid but a uniform coating covering the entire radiating surface. The firm uses especially tempered Pyrex brand glass with spring loaded carbon contacts mounted on brass bus-bars to make electrical contact with the silver terminating edges of the conductive coating.

This new panel has a built-in thermostat and is rated at 750 watts or 2,560 Btu. It is available in two styles, complete with guard.

The "Select-a-Temp Junior" is not affected by high humidity and its glass panel is proof against accidental splashing of cold water. It is 21⅝ inches high by 14¼ inches wide by only 2⅞ inches deep and mounts flush against the wall as easily as an ordinary electric outlet.

For additional data, circle item 1107 on the handy coupon below.

Marco recessed fixtures use Holophane Controlens

A NEW SERIES of recessed lighting fixtures, utilizing the Holophane prismatic lenses and prismatic glass reflectors, has been announced by Marvin Manufacturing Co., 1826 N. Sheffield Ave., Chicago, Ill.

Marco's introduction of the patented "EZ Relamp" feature and the Marco "Gravity Hinge" makes its equipment unique. Under all installation conditions, the Marco Holophane equipped line can be relamped from the floor with a lamp changer.

This new series also utilizes the engineering installation features of the standard Marco line—the patented Junction Box and Bar Hangers.

For additional data, circle item 1108 on the handy coupon below.

Lightolier offers Lytescape display

MANY ELECTRICAL DEALERS and distributors have already placed their orders for a new handsome, eye-catching display unit, created especially for the new Lytescape series of adaptable garden lighting units recently introduced by Lightolier,

Inc., 346 Claremont Ave., Jersey City 5, N. J.

The unit provides for the integrated display of representative fixtures in a compact floor area of only eight square feet. A "self-selling" display, it presents customers with both written and visual guides to Lytescapes' value and effectiveness.

Asymmetrical placement and special notches in the base of the unit allow for close examination of each of the fixture's special features. A single electrical cord extends from the unit, so that the entire display

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NOVEMBER, 1954

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B1105	1114	1123	1132	1141	1150
B1106	1115	1124	1133	1142	
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FOR MORE INFORMATION — Use this handy return coupon for requesting manufacturers bulletins or additional information on new products listed in these pages. Be sure to give firm name and your position or title.

may be lighted instantaneously.

Lytescapes, which were presented recently by LIFE magazine in a full color editorial feature, are easy to install because of an "add-a-unit" connection feature.

For additional data, circle item 1109 on the coupon on page 63.

'Sealtite' UL approved for wet location use

"SEALTITE" flexible electrical conduit Type UA, the first of its kind to gain Underwriters' Laboratories approval for use in wet locations, is announced by the American Brass Co., Waterbury, Conn., who in 1947 developed the JIC-approved Sealtite designated as Type EF, now widely used by the automotive and machine tool industries.

The tough, extruded synthetic covering over Sealtite Type UA's flexible metal core protects wiring against moisture, oil, dirt, chemicals, and corrosive fumes—on permanent and temporary installations. The conduit is made of spirally wound, interlocked zinc-plated steel strip with a copper bonding conductor wound spirally in the space between each convolution on the inside of the conduit.

Light and flexible, Sealtite Type UA can be cut to required lengths —bends easily. Underwriters' approved fittings for use with Sealtite Type UA are readily available. Where space is cramped and hard to get at, Sealtite Type UA is easy to install. Applications of this moisture-proof conduit are suggested to overcome the problems of movement, vibration, misalignment—both indoors and outdoors.

Sealtite UA is available in long lengths in nominal electrical ID sizes ⅜ inch to 1¼ inches inclusive.

For additional data, circle item 1110 on the coupon on page 63.

Pyle-National adds liquid-tight connector

ANNOUNCEMENT of the addition of a liquid-tight connector, designated series "CT," to its extensive line of conduit fittings, has been made by Pyle-National Co., 1334 N. Kostner Ave., Chicago 51, Ill.

This new connector, for use with "Sealtite" flexible conduit or equivalent, has several important improvements. It has an extra strong grip with compression force supported by the body shank, not the conduit alone, making a vise-like clamp.

The connector has a highly efficient ground, less than 10 millivolt drop. Tapered grounding shank, integral with the connector body, makes a firmly wedged contact with the flexible metal conduit.

The unit has a permanent seal. The plastic sleeve and conduit sheath have equivalent physical characteristics. The seal will last the life of the conduit, unimpaired by temperature variations within the limits of the conduit.

It affords displaced bending action. The tapered grounding shank is elongated to extend beyond the gland nut, thus avoiding short radius bends which shorten the life of the conduit sheath and, more important, the permanency of the joint.

"CT" series connectors can be installed assembled. Available in straight, 45 degree and 90 degree types for ⅜ inch to two-inch liquidtight flexible conduit, the connector meets UL and J.I.C. standards.

For additional data, circle item 1111 on the coupon on page 63.

Cutler-Hammer offers raintight conduit hub

A NEW INTERCHANGEABLE conduit hub for raintight equipment has been announced by Cutler-Hammer, Inc., 233 North 12th St., Milwaukee, Wis. The device is important in that it incorporates a new idea in design of raintight enclosures. Being interchangeable, the hubs will enable distributors and dealers to have more stock flexibility without having a high inventory on each item.

The raintight NEMA 3 enclosures, with 200 ampere size capacities, include safety switches, Unit Breakers and service control equipment. They have a round opening in the top end wall which is covered by a blank plate with a gasket. The blank plate is fastened in place with bolts and can be replaced in the field with any one of the interchangeable type hubs, in sizes ¾ inch to two inches.

For additional data, circle item 1112 on the coupon on page 63.

Porcelain Products adds service entrance mast kit

A SERVICE ENTRANCE mast kit, complete in every detail has been announced by Porcelain Products, Inc., Findlay, Ohio. Immediately available, this kit comes with all parts—even the roof flashing and all necessary nuts, bolts, lag screws, and nails. Everything furnished but the conduit and the ranch style house to which it is to be attached.

Known as the 2075 series kit—it is a convenient, all inclusive, mast installation kit. The fact that it can be erected by an electrician with electricians tools adds to the wide accep-

AIR-FLO MODEL 610
AUTOMATIC CEILING SHUTTER
Outstanding Features of Model 610 Automatic Ceiling Shutter
• Neutral Aluminum Color Blends With Any Decoration and Color Scheme
• Flush Appearance
• One Continuous Panel Regardless of Width
• Maximum Free Air Opening
• Fusible Links Release Spring Action in Case of Fire
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MANUFACTURED BY AIR CONDITIONING PRODUCTS COMPANY
2340 W. LAFAYETTE • DETROIT, MICHIGAN

tance of those installers who have been looking for a complete unit.

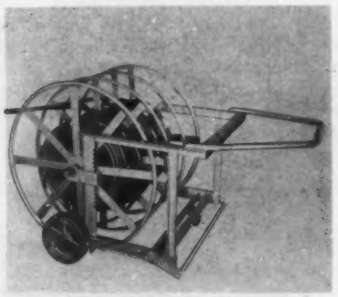
Because the conduit can be purchased at lower cost, from local stocks, it has not been included in this kit.

For additional data, circle item 1113 on the coupon on page 63.

Compartmented reels aid in cable handling

THE PRODUCTION of compartmented reels which offer new convenience in handling cable has been announced by the Reel-O-Matic Corp., Division of Columbia Industries, Inc., Columbia, Pa.

Used in conjunction with a Reel-O-Matic unit, cable can be measured,



coiled and cut to proper lengths for each compartment of the reel in the warehouse instead of on the job. Complete reel can then be shipped to the job where it is ready for immediate use.

One man alone is then able to pull the cable easily and quickly without assistance in pulling, measuring or cutting. It is not necessary for him to disrupt plant activities or other personnel.

For additional data, circle item 1114 on the coupon on page 63.

Electriglas announces radiant heating display

ELECTRIGLAS CORP., Bergenfield, N. J., manufacturers of electric radiant heating units, is offering a new, nine-foot setup for the display of its products.

Designed to display as many of the firm's items as possible in a limited area, the unit is made of peg board, supported on sides and back by a wooden frame. Each side is 80 inches high and 24 inches wide, while a 67 inch overhang, 17½ inches deep, allows for the support of ceiling units.

The board itself is a soft cream in color, to any section of which explanatory signs in black on orange or white on black, may be attached. The panel units may be set up at any spot in back, sides or ceiling,

"when I have to get into my wireways

I'M GLAD I INSTALLED B&C HINGED COVERS!"

Say Plant Superintendents in today's busiest factories

B&C HINGED COVER WIREWAYS

ACCESSIBILITY *plus* **CAPACITY**

unequalled by any other type of wiring trough

Almost any wiring combination is possible with these B&C Wireways. It's no wonder they're specified again and again by both electricians and plant men. They give greater protection and save time when wiring has to be changed, tapped or spliced frequently. Extensions and rerouting are made simple and easy with B&C Type "HCW" Wireways.

Die formed from heavy gauge steel, as specified by the Underwriters Laboratories and the National Electrical Code. Hard light grey enamel finish. Standard knockouts. Extra rigid construction.

Write for complete catalog data, sizes and specifications.

UL B and C

METAL STAMPING CO.

590 MEANS ST., N. W., ATLANTA, GEORGIA

Your Seals of Dependability and Safety

and supported in place by bolting through the peg board.

While the display is ideal for floor, showroom and window use, it has been so designed that it can also function effectively at home shows, fairs, and other public gatherings.

For additional data, circle item 1115 on the coupon on page 63.

Ubolet biting edges provide firm pressure

A NEW RIGHT ANGLE Ubolet Type X pipe support, designed for use with standard pipe or rigid steel conduit for mounting on structural flanges up to ⅞ inch thick, has been announced by Spedon Pipe Clamp Co., 33-51 60th Place, Woodside 77, N. Y.

The Ubolet body is made of heavy gauge pressed steel and hardened by the manufacturer's special Ramodized process combining an unusually hard and corrosion resistant surface with flexible inner core. Sharp biting edges at the corners are further apart than the U-bolt legs and provide self-equalizing bite pressure and better stability.

The Spedon Ubolet retains a constantly effective clamping tension in the U-bolt, provided by the saddle spring action. This feature makes this pipe support ideal for heavy-duty industrial applications.

The Ubolet Type X has bodies for pipe sizes ¾ inch and one-inch and have interchangable U-bolts and bodies for sizes 1¼ inch and 1⅛ inch. Each Ubolet is furnished complete with standard zinc-coated steel U-bolt and nuts assembled ready for use. Available in 3/3 inch to two-inch pipe sizes.

For additional data, circle item 1116 on the coupon on page 63.

Appleton Electric offers explosion-proof union

A COMPLETELY NEW, self-adjusting expansion type explosion-proof conduit union has been placed in production by Appleton Electric Co., 1701-1759 Wellington Ave., Chicago 13, Ill. The new union is safer and effectively reduces costs through greater ease of installation.

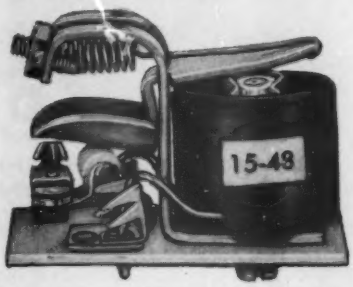
The expansion union is a self-contained unit consisting of two parts as compared with conventional three piece unions. It is permanently assembled at the factory, is never taken apart, and requires only two tightening operations. Precision-built, it is explosion-proof under all conditions of expansion. The risk of explosion hazards due to failure to completely "draw up" conventional contact surfaces is eliminated in this new union.

Reduced external diameters permit easy installation in places where conventional unions are difficult to install, and a built-in phosphor-bronze spring insures positive grounding at all times. Furthermore, only one of these new Appleton unions is required on installations normally using two conventional unions, thus reducing equipment costs and saving most of the installation time.

For additional data, circle item 1117 on the coupon on page 63.

Improved relay replaces centrifugal switches

AN IMPROVED RELAY, which replaces centrifugal switches on single phase capacitor-start and split-phase motors, and now features a new variable magnetic phase shift within the relay coil, has been announced



by Lewus Electric Co., 1254 W. Harrison St., Chicago 7, Ill.

The relay is constructed of magnetic steel tubing. The magnetic core set screw now carries an adjustable copper shading coil for providing a variable magnetic phase shift in the relay coil. This permits adjustment of the difference in time lag between the two magnetic fluxes of the steel tubing and the core set screw within the coil.

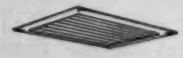
The new design permits very sensitive adjustment of the relay spring tension and silent, snap-action operation of relay contacts. Operation is constant over a wide range of temperature variation.

The Lewus relays are available in six coil sizes for motors from ⅛ to 5 hp.

For additional data, circle item 1118 on the coupon on page 63.

ThermoRay wall heater incorporates thermostat

A NEW RADIANT electric wall heater with a thermostat and pilot light forming an integral part of the unit has been placed on the market by

Your customers  will be tickled pink ... with Pry-Lite

Pry-Lites are made for every room in the house • Volume sales — maximum profits • No trade-in worries — one sale does it • No service problems to plague you • Save time — save money on installation costs • Pry-Lites are everything you say they are • Housewives will love 'em • Pry-Lites cut housework to the bone • Powerful national advertising campaign • Outstanding displays and sales helps.

Specify the line designed by

pryne

rhymes with FINE...and means it!

AEROFAN

Exhaust fans for multiple housing projects and remodel work

PRY-LITES

Residential and commercial recessed lighting fixtures

GLOMASTER

Infra-red, recessed, auxiliary wall heater

BOX 5114, POMONA, CALIFORNIA

Eastern Factory: Keyser, West Virginia

Warehouses: Los Angeles; San Francisco; Chicago; Newark, New Jersey

Distributed by Electrical Wholesalers Everywhere in the U. S. and Canada

ThermoRay Corp., 141 East 44th St., New York 17, N. Y. There are two models, designed for surface mounting, rated at 1250 and 750 watts respectively. Either may be had for operation on 230 or 115 volts a-c. Various other models of ThermoRay electric wall heaters are available for recessed or surface mounting.

This new heater has a thermostat containing a pilot light and is completely wired. It needs only to be connected into the circuit, a simple operation. The thermostat is a double pole, single throw temperature controller which automatically cuts off all current to the heater whenever the room temperature reaches the thermostat setting.

The unit has been approved by Underwriters' Laboratories, Inc.

For additional data, circle item 1119 on the coupon on page 63.

Feedrail introduces new 20 amp trolleys

FOUR NEW 20 ampere special service trolleys, designed for applications of the Feedrail "60" trolley busway electrification system in which service is continuous or where capacity higher than provided by "standard 60" trolleys is necessary, are now available from Feedrail Corp., 125 Barclay St., New York 7, N. Y.

The extra capacity afforded by these new trolleys is particularly advantageous in budget hoists, low tonnage cranes, portable and machine tools where motors up to three hp can now be powered without trolley overload. For moving equipment, such as cloth spreaders and that used on test lines, these new special service trolleys give longer contact life, thus reducing maintenance costs. Because of their rugged and compact design, they permit the use of curved track with radius as small as two feet - six inches.

Special service trolleys are available in fusible and nonfusible types, in two or three poles. They are delivered to the job completely assembled and can be installed in a few minutes.

For additional data, circle item 1120 on the coupon on page 63.

L-M capacitor blocks are factory assembled

LINE MATERIAL CO., 700 W. Michigan St., Milwaukee 1, Wis., is manufacturing factory-assembled capacitor blocks for use in open type banks at transmission, subtransmission, and distribution voltages. These blocks afford savings by reducing field installation charges. They also provide flexibility for relocation and permit changes in bank size as varying circuit conditions require.

Here's Why the USERS

appreciate

"Buffalo" INDUSTRIAL EXHAUSTERS

Chemical and process plant men

Flour, feed and grain processors

Factory maintenance men

Brick and ceramic operators

General plant engineers

SPECIFY "BUFFALO" INDUSTRIAL EXHAUSTERS

EFFICIENCY

Smooth interior surfaces with no rivet heads to cause friction, mean high efficiency air or materials exhausting with "Buffalo" Industrial Exhausters. This, plus easy maintenance, means lower operating cost.

ENDURANCE

Punishment-proof construction includes all-welded, heavy steel plate housings and rotors; oversize shafts and bearings to take continuous gas exhaust or materials conveying service.

MODELS FOR EVERY JOB

"Buffalo" Exhausters are built in models for high temperatures, corrosive fumes, erosive or stringy materials — even forced draft applications.

WRITE TODAY FOR BULLETIN 3567

Right, Type "AW" Air Wheel

Far Right, Type "MW" Material Wheel

BUFFALO FORGE COMPANY

210 Mortimer St. Buffalo, New York

PUBLISHERS OF "FAN ENGINEERING" HANDBOOK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

Sales Representatives in all Principal Cities

Panel Breeze Fans • Belted Vent Sets • Belt-Air Fans
Breez-Air Attic Fans • "L" Breeze Fans • "NV" Breeze Fans

Cash in on the
$15,000,000,000.00
MARKET!

Here's 3 way
PROFIT
for electrical contractors and jobbers

Plug Plugmold

PROFIT on selling and installing PLUGMOLD

Special New Kitchen Package for contractors. Install this unit in your own home. Merchandise and sell it to your customers. CUTS HOURS OFF ELECTRICAL OUTLET INSTALLATION TIME. *(Free fitting for contractors with one purchase of Plugmold.)*

PROFIT on EXTRA business PLUGMOLD will bring you

Plugmold opens the door to a big new market — $15,000,000,000. In electrical modernization needed in 30 million buildings. Sell Plugmold and pull in rewiring business and related sales.

PROFIT plus prizes when you PLUG PLUGMOLD

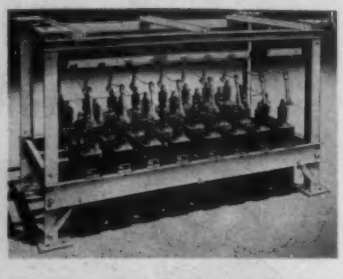
Contractors and jobbers profit on Plugmold sales and extra business . . . and get valuable prizes, too! Everyone wins every sale of Plugmold earns prize points.

***Plug* PLUGMOLD and win 3 ways!**

See your electrical jobber for details.

THE WIREMOLD COMPANY
HARTFORD 10, CONN.

A standard block consists of two rows of 25-kvar, 5-kv or 8.7-kv class capacitor units connected in parallel and mounted in a galvanized steel frame of standardized dimensions. Ready for installation with similar



equipments, available blocks have capacities of 250, 300, 350, 400, 450, 500, 550, and 600 kvar. Individual expulsion type fuses protect the capacitor units. Base insulators are used to insulate banks from ground for full system BIL, and stacking insulators can be used between frames.

For additional data, circle item 1121 *on the coupon on page* 63.

Viking blower offers 12 motor mounting locations

A NEW UNIVERSAL BLOWER which can be mounted in any of the four standard discharge positions and offers 12 motor mounting locations has been introduced by Viking Air Conditioning, 5601 Walworth Ave., Cleveland 2, Ohio. The Universal units are furnished to furnace manufacturers with feet, motor bracket and sheet metal screws shipped unassembled to permit the manufacturer to assemble for any of four desired discharge positions and motor location.

Housing sides are pierced and slotted, making for fast and easy mounting of feet and motor on the manufacturer's production line. Extensions on both ends of the shaft permit the drive to be mounted on either side.

Advantages of the Universal blower—which is available in all widths of the nine and 11 inch blowers—are that it gives the furnace manufacturer greater flexibility with a smaller inventory, and reduces stock handling in his factory.

For additional data, circle item 1122 *on the coupon on page* 63.

I-T-E enclosure designed for dust-laden atmospheres

A NEW ENCLOSURE, patterned after Joint Industrial Conference requirements by I-T-E Circuit Breaker Co., 19th & Hamilton Sts., Philadelphia 30, Pa., assures dependable circuit breaker operation in atmospheres containing excessive particles of lint, dirt, sawdust and other foreign matter.

Mounting holes and knockouts are omitted to prevent foreign matter as well as oil or coolant from entering the enclosure. External mounting feet simplify the mounting installation. Solid sheet-steel sides and back have closed welded seams. The enclosure is finished in attractive bonderized enamel.

Newly designed operating mechanism operates breaker from outside

the enclosure. Visual name plate indicates position of breaker handle at all times. The handle may be padlocked in either "on" or "off" position. Defeater arrangement allows authorized personnel to open enclosure cover with breaker in "on" position. Design includes double-locking provisions—of handle operating mechanism and enclosure cover. Neoprene gasket assures tight seal when cover is shut.

Enclosures are available with I-T-E "E," "F," "J," and "L" frame circuit breakers in ratings from 15 - 600 amps.; 125 - 600 v. a-c; 125 - 250 v. d-c.

For additional data, circle item 1123 *on the coupon on page* 63.

T&B connectors protect against corrosive fluids

NEW LIQUID-TIGHT flexible conduit connectors for Sealtite or equivalent have been announced by the Thomas & Betts Co., 72 Butler St., Elizabeth 1, N. J. This connector line, listed by Underwriters' Laboratories and meeting J.I.C. requirements, includes straight, 45 degree angle and 90 degree angle connectors, ranging in K.O. size from ½ to two inches and in conduit size from ⅜ to two inches, both sizes inclusive. The T&B line also includes sealing O-Rings for a liquid-tight seal between the connector and the knockout box in the same sizes.

The T&B line features a blue plastic gripping ring. The plastic jacket of the conduit is held in the plastic ring, plastic to plastic, the

conduit is never injured. When the gland nut is tightened, the bright blue lip on the plastic gripping ring appears, assuring that the job is tight.

The tapered tube in the T&B connectors takes up more than the manufacturing tolerance, expands the conduit slightly, and makes a sure ground connection. The long tapered tube is integral with the body of the connector and grounds the conduit positively, every time, regardless of variations in the I.D. of the conduit.

For additional data, circle item 1124 on the coupon on page 63.

P&S weatherproof outlet comes complete with box

A NEW DUPLEX OUTLET, P&S No. 4530, which comes complete with box and simplifies and speeds up weatherproof outlet installations, has been announced by Pass & Seymour, Solvay Station, Syracuse 9, N. Y.

The unit is designed for surface mounting. The box is of cast aluminum and the plate and caps are of finest aluminum alloy.

To install, a hole is drilled through siding or wall into basement or other accessible inside space. The cable is fed from inside the house through a rubber grommet into the box where it is held by a clamp.

The UL approved outlet is wired in the usual manner. Provision is made for a third wire ground where desired.

Cover and gaskets and rubber grommet seal the outlet against the elements. Complete instructions for installing are in each carton.

For additional data, circle item 1125 on the coupon on page 63.

Appleton 'ST' connectors meet UL, JIC standards

THE "ST" SERIES of connectors for liquid-tight flexible conduit ("Sealtite," "Flexon" or equivalent products), positively exclude water, grease, oil, chemical and acid fumes, and dirt from electrical wiring sys-

EVERYWHERE...

people are swinging over to

ELECTRIC HEAT!

CSM—3-A-54

Cavalier®

AUTOMATIC ELECTRIC

SURFACE MOUNTED HEATERS

The only easy to clean heaters designed especially for conversion purposes are Cavalier's new "Shadow Box"—AUTOMATIC ELECTRIC SURFACE MOUNTED HEATERS. They will make money for you on every job. No carpentering is necessary . . . no plaster and sawdust litter rooms. Insert 4 bolts, make wire connection through either back or bottom knockout holes and the job is finished!

THESE EXCLUSIVE FEATURES will appeal to your customers:

Cleaning time—3 minutes or less, with no bolts or screws to remove . . . No dust catching projections . . . Compact, less than 20" high, fit under low windows . . . 3 position control switch. Accurate 2° differential thermostat assures comfort.

Completely Automatic 4 sizes, 1.5 KW to 4 KW

Write for descriptive literature on Cavalier's Complete Line—Wall Insert, Surface Mounted, Portable, Full Chrome Finish Automatic and Non-automatic Bathroom Heaters, and Floor Furnaces.

GUIDE FOR CALCULATIONS OF ELECTRIC SPACE HEATING SENT ON REQUEST

CAVALIER CORPORATION

Electric Heater Division

CHATTANOOGA 2, TENNESSEE

NEW!

DOSSON "F"

SPLIT BOLT CONNECTOR

For:

taps, dead-ends, service entrances, motor leads, junction boxes, ground wire-to-neutral connections

Fabricated from high strength alloys, all component parts of the new Dosson "F" Connector are cold formed, insuring consistent uniformity and high quality. Can be used economically over and over again!

Why It's Your Best Bet:

- high clamping pressure insures tight contact
- maximum tightening force: high translation of tightening torque
- connector alloys possess greater physical properties than average steels
- longer bearing pressure bars avoid conductor crushing, load concentration
- smooth edges can't cut lineman's gloves, nick conductors
- withstands high overload, vibration, corrosion

50 YEARS OF TECHNICAL KNOW-HOW

FREE SAMPLE upon request. Write today!

IN STOCK FOR IMMEDIATE DELIVERY

DOSSERT REPRESENTATIVES IN PRINCIPAL CITIES

DOSSERT MFG. CORP.

249 HURON STREET, BROOKLYN 22, N. Y.

SINCE 1904

tems, according to the manufacturer, Appleton Electric Co., 1701-59 Wellington Ave., Chicago 13, Ill.

The Appleton series includes straight, straight with female hub, 45 degree and 90 degree connectors. All connectors come complete with all accessories. There are no other parts required from outside sources. The connectors are easy to install and have a voltage drop of less than 10 millivolts.

Listed by Underwriters' Laboratories, and meeting J.I.C. standards, the "ST" series is available for all standard liquid-tight flexible conduit sizes.

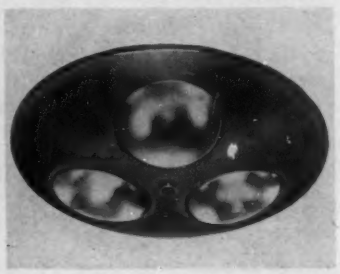
These connectors have found wide usage in these industries: food processors, bakeries, dairies, printing trades, paper production, chemical plants, bottling works, breweries, textiles, woodworking, utilities, mining, petroleum, and transportation.

For additional data, circle item 1126 *on the coupon on page* 63.

Pryne ceiling heater uses infra-red lamps

PRYNE AND CO., 142 N. Towne Ave., Pomona, Calif., has announced a new ceiling heater. This unit employs radiation from heat lamps, directing infra-red heat rays from ceiling to floor, instantly, at the flick of a switch.

There is no waiting for elements to warm up or hot air to circulate, the infra-red rays give deep, penetrating heat. The new Pryne unit is recommended for bathrooms, especially where wall space is limited. Easy to install, this ceiling heater is a recessed fixture installed between ceiling joists. It is pre-wired to a built-in pull box, and does not require a special circuit.



Available in one-lamp and three-lamp units with either chrome or painted finish, the ceiling heater has no reflector to polish, is quiet, has no fan or motor to service, is UL approved, and is easily cleaned by merely wiping the surface. Cost of operation is nominal, only 750 watt for the three-lamp unit.

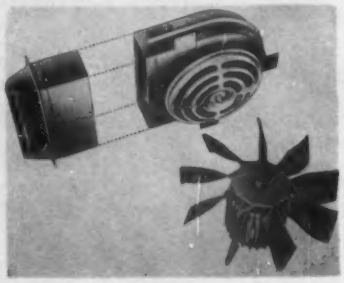
Because it is installed in the ceiling, children cannot touch it, making it extremely safe, even for bathroom use. It accomodates R-40 infra-red lamps available at any electrical or appliance store.

For additional data, circle item 1127 *on the coupon on page* 63.

New Fasco fan offers improved performance

NEW DESIGN of the popular 10-inch Fasco Ceil-N-Wall ventilating fan, resulting in improved performance at lower noise level, has been announced by Fasco Industries, Inc., 37 Augusta St., Rochester 2, N. Y.

The Fasco Model 1021, already in production, with the new nine-pedal Turbo-Radial impeller, embodies the latest design in air moving equipment. The new ventilating fan moves air with the quietness of a blower and the capacity of a propeller, the company states.



Noise caused by moving air at high speeds has been substantially reduced through research at the Fasco laboratories. Air delivery and other specifications remain unchanged. The new 10-inch Fasco Ceil-N-Wall ventilating fan will deliver 530 cfm at highest of three speeds through 10 feet of duct.

The company indicated that prices will not be advanced on the new model.

For additional data, circle item 1128 *on the coupon on page* 63.

Raco bar hangers give application flexibility

A NEW ADJUSTABLE bar hanger has been announced by Raco Division of All-Steel Equipment, Inc., Aurora, Ill.

Raco has developed a special shape that adds tremendous strength to their new hanger. Adjustment is obtained by a telescoping action of the two halves of the hanger similar to the action of an adjustable curtain rod.

Another new advantage is a clip which secures the box to the bar without interfering with device space in the box. It also provides added wiring room in multiple device boxes.

The new bars are available in two styles, clip bars and stud bars. Each bar style comes in two sizes to fit

various studding spacings. Both new clip bars and stud bars fit all sizes of furring and studdings from one-inch x two-inch to two-inch x four-inch and all sizes of joists and rafters. According to the manufacturer, it is the only bar hanger designed to fit modern shallow-wall construction.

Other advantages include: simplicity and ease of installation; clean electrogalvanized finish; flanges automatically locate box at proper depth for plaster walls and dry walls; avoids notching of studding and bending of hangar to achieve proper box location; and so flexible in application that only four new Raco bar hangers replace 16 models of conventional bar hangers, and thus reduce necessary inventories.

For additional data, circle item 1129 *on the coupon on page* 63.

Transformer guard designed by Hubbard

HUBBARD AND CO., 6301 Butler St., Pittsburgh, Pa., have designed a simple transformer "Squirrel Guard" to overcome the frequent trouble

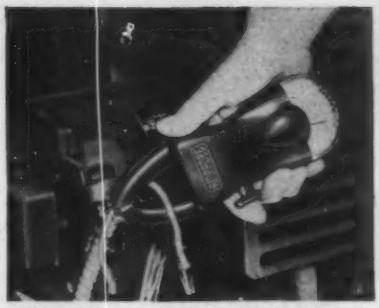
caused by birds and animals creating outages.

The guard is funnel shaped, formed of wet process porcelain, brown glazed. It fits over any type of transformer bushing and approximately doubles the distance from hot to grounded parts, greatly reducing the danger of birds or animals shorting out the bushing.

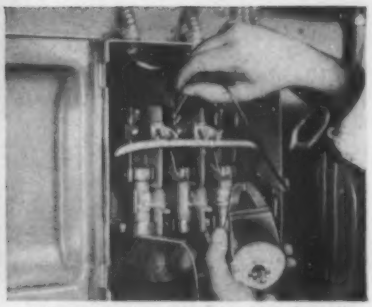
For additional data, circle item 1130 *on the coupon on page* 63.

Arrow-Hart announces magnetic starter line

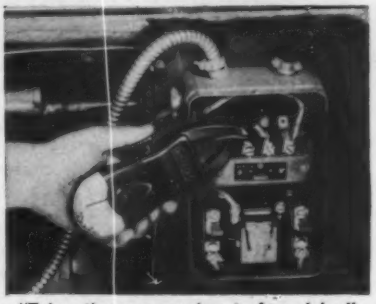
THE AVAILABILITY of a new line of magnetic, across-the-line starters and contactors designed specifically for the air conditioning and refrigeration industries has been announced by the Industrial Control Division, Arrow-Hart & Hegeman Electric Co., 103 Hawthorn St., Hartford 6, Conn.



"No shutdowns to take current readings"



"A real short cut for checking fuses"



"Takes the guesswork out of servicing"

save hours this way!

Did you read the comments under the photos? They're typical reports from Amprobe users in the field, telling us how much easier their work has become now that they can measure current and voltage instantly and accurately, with one pocket tool, without having to shut down equipment.

There's an Amprobe for every job, every budget: from 10 amp and 250 volts to 1200 amp and 600 volts AC; from $19.85 to $67.50. See them at your jobber's today.

Send for valuable Amprobe service bulletins showing many more ways to save time and eliminate guesswork. Mail coupon now to: PYRAMID INSTRUMENT CORP., LYNBROOK, N. Y. (Export Div.: 458 Broadway, N. Y. 14), world's largest manufacturer of snap-around volt-ammeters.

"Periodic motor checks pay off"

"No longer a problem to balance load"

"I can check appliance current at plug"

Amprobe®

snap-around volt-ammeters

Send For Free Service Bulletins:

Pyramid Instrument Corp.
Dept. E5 114, Lynbrook, N. Y.

Please send me the Amprobe service bulletins checked below:

- ☐ How to cut costs and land more jobs
- ☐ Trouble-shooting electric motors
- ☐ How to boost service profits
- ☐ Electrical servicing of hermetic units

NAME_____

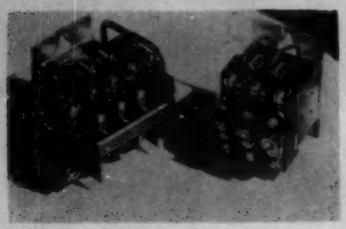
COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

Specially engineered for use with refrigeration compressor motors, these controls are the result of research and work in close co-operation with leading refrigeration engineers.

To provide the special tripping characteristics required by hermeti-



cally sealed motors for protection against burnout, Arrow-Hart air conditioning controls can be equipped with Type "QT" quick trip heaters. These quick trip heaters and standard heaters both fit standard overload relays and require no special equipment such as spindles or non-standard relays.

Since the rating of 30 amperes at 300 volts maximum a-c only, covers all compressors to approximately eight tons capacity, Arrow-Hart points out that one size of control will cover practically all installation needs. Complicated and costly inventories will be eliminated.

For additional data, circle item 1131 on the coupon on page 63.

Southern States adds distribution fuse links

NEW FUSE LINKS Types AK and AT with melting time-current characteristics that meet EEI-NEMA standards for distribution fuse links have been announced by Southern States Equipment Corp., Hampton, Ga.

These new fuse links feature a principle of arc extinction that greatly improves their dependability on overload or restricted fault conditions.

This new arc-quenching ability at overload currents is a standout feature of these Southern States links. It is accomplished through the use of boric acid powder located in intimate contact with the arc of a rupturing link. The mass of boric acid volatilizes, instantly building a vapor pressure high enough to quench the arc. In addition, the high vapor pressure expels the lower end of the fuse link at a velocity far greater than with a conventional spring.

Southern States AK and AT are universal type fuse links and are easily adapted to fit any double vented cutout from 5 KV through 17 KV. Simply remove the screw-on button head, cut the flexible cable and screw the two threaded ferrules together. The result is a double pigtail link as required in double vented fuse holders.

For additional data, circle item 1132 on the coupon on page 63.

K&H terminal lugs are available in six sizes

A SERIES of Universal Pressure Type Adjustable Terminal Lugs which are simple in design, rigid and strong, and easily and speedily installed, has been announced by Krueger & Hudepohl, 5 East Third St., Cincinnati 2, Ohio.

The lug body is well proportioned to withstand excessive use, with

ample thread area. The unit makes a tenacious grip on stranded conductors, forcing contact with each wire in the strand, and thereby insuring the utmost in conductivity. Bottom of the tongue surface is ground. Threads are National Fine Thread, offering a maximum clamping pressure at low wrench torque—not susceptible to release under vibration.

Quality workmanship and materials are used in this lug series of six sizes, from No. 14 to 1,000,000 CM. The moisture resistant units are constructed of 85 per cent copper alloy.

For additional data, circle item 1133 on the coupon on page 63.

Vibraswitch serves as protective device

USED FOR VIBRATION measurement or as a protective device permanently installed on any rotating or vibrating machine, the new Model 1 Vibraswitch has been announced by the Beta Corp., P. O. Box 8625, Richmond 26, Va.

Revere ELECTRIC MFG. CO. CHICAGO U.S.A.
POLES
Especially Designed for MERCURY-VAPOR LUMINAIRES

Here's a selection of Poles that paves the way to big business among new or old Gas Stations offering conversion of lighting standards to the latest in Mercury-Vapor illumination. Big sales await you in this vast market for both Poles and Luminaires. Write for Literature immediately.

Available from stock for immediate shipment

A
Single arm air, water and light Pole with Revere 3068 Mercury Vapor Luminaire. Upper section only can be used as replacement on old Pump Island Lighters.

B
Graceful double arm tapered steel pole with Cluster top floods and two Mercury Vapor No. 3068 Luminaires.

C
Rigid Pole with three arms which can be positioned to suit location.

D
Old Pole converted to Mercury Vapor. Transformer housing placed between upper and lower sections. Luminaire is No. 3048.

A B C D

REVERE ELECTRIC MFG. CO. 6005 BROADWAY CHICAGO 40, ILL.
INDOOR & OUTDOOR LIGHTING FOR EVERY NEED

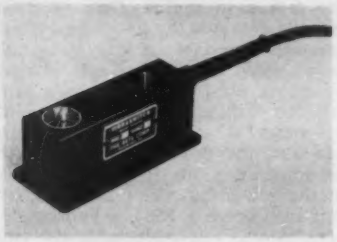
TOPS IN MERCURY-VAPOR APPEARANCE CONSTRUCTION and PERFORMANCE

REVERE "69'er" SLIP FITTER ARM ACCOMMODATES TRANSFORMER

REVERE NO. 3068 Side Mount Luminaire

NO. 3048
LATEST MERCURY VAPOR AREA LIGHTER
Accommodates One To Five Top Floods

This unit serves to prevent costly damage or material wastage from malfunctions causing or resulting from excess vibration. An internal SPDT snap switch may be wired into control circuits carrying up to five amperes to actuate a warning or



shut-down the machine the instant that the vibration exceeds normal by a preselected amount.

The device is capable of actuation with vibratory displacement increases of less than 10 microinches at the most sensitive setting. Flat frequency response from 0 to 200 cps., (12,000 rpm), insures reliable results on high speed equipment. The Vibraswitch requires no power source or special auxiliary equipment.

For additional data, circle item 1134 *on the coupon on page* 63.

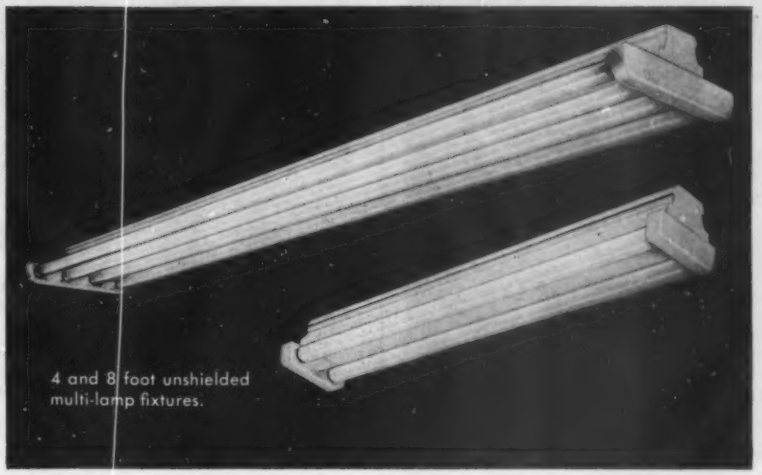
G-E hand tachometer has scale-changing device

A NEW PORTABLE, hand tachometer, featuring a scale-changing device which reduces misreading of its various ranges, has been announced by the General Electric Company's Meter and Instrument Department, Schenectady 5, N. Y.

Three different models, each having three ranges, are capable of

measuring rotational speeds from two to 100,000 rpm and linear speeds from two to 10,000 fpm with accessories. Accuracy is plus or minus one per cent of full scale under all conditions, according to G-E engineers.

Applications of the tachometer include speed measurement of mo-



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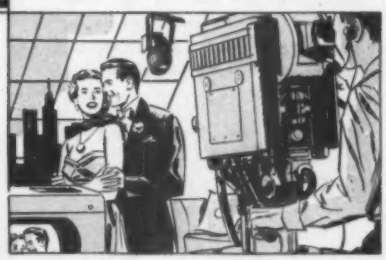

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Now Sylvania offers a great, complete line of economical Strip (unshielded) Fixtures that opens up new fields of lighting opportunities.

In addition to over-all ceiling illumination the new Multi-Lamp Series is ideally suited to TV Studios, Supermarkets, Waiting Rooms, and numerous areas where high lighting intensities are required.

Available with two, three, or four lamps . . . in 4-foot and 8-foot lengths. Bonderite treated and finished with Sylvania's Miracoat enamel assuring 86% reflectivity.

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The new "OR" series Pylets with interchangeable features will meet all conduit fitting requirements for *machinery wiring... plant maintenance... and new construction.*

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tors, generators, turbines, lathes, milling machines, planer beds, shapers, band saws, conveyor belts, and all continuous webs.

The equipment consists of two basic units: a head, which is placed against the moving object; and an indicator, which is attached by a two-foot flexible electric cable.

Accessories include two external cone tips, an internal cone tip, a 0.1-foot disk, a one-foot disk, a low-speed adapter, a high-speed adapter, and an extension arm, all stored in a compact carrying case along with the tachometer.

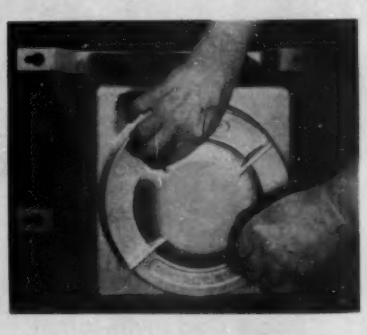
The equipment has a total weight of 3-¾ pounds, including carrying case, which measures 11-7/16 x 7-5/16 x 3-¾ inches.

For additional data, circle item 1135 on the coupon on page 63.

Explosion-proof boxes designed by Killark

NEWLY ADDED to the line of fittings manufactured by Killark Electric Manufacturing Co., Easton & Vandeventer Avenues, St. Louis 13, Mo., are the GRH Series explosion-proof junction boxes.

These new junction boxes are available in sizes up to 11 x 12 x 7½



inches. While large in size, the new Killark box is light in weight, constructed of Alumalloy.

The cover opening measures 9⅝ inches in diameter, allowing plenty of convenient hand room for wire splicing.

The GRH Series take conduit hubs from ½ to four inches, and these can be drilled and tapped in any position desired. The boxes can be mounted either vertically or horizontally. Straps are included for this purpose.

Designed for explosion-proof installations, the GRH Series boxes are UL approved.

For additional data, circle item 1136 on the coupon on page 63.

Stab-lok No. 2068 ideal for homes or small plants

A NEW STAB-LOK circuit breaker device, No. 2068, is now being produced by Federal Electric Products Co., 50 Paris St., Newark, N. J. The No. 2068, designed in accordance with the National Electric Code, is a low cost, relatively large service switch suitable for homes or small industrial operations.

The 2068 has six three-wire circuits which are fed in parellel from the 200 amp mains. One of these circuits controls the lower bus which can accommodate either eight single pole Type NA Stab-lok circuit breakers or four two-pole simultaneous trip circuit breakers. With the new "E" slots in the enclosure bus bar, the device will be able to accommodate ten lighting breakers in the lower bus. The Stab-lok circuit breaker No. 3068, a similar device, is also available with 300 amp mains.

The enclosure for the new 2068 circuit breaker is the combination flush-surface type. The interior is mounted on a pad and four leveling screws are provided for plaster adjustment. Main lugs are the removable, solderless type, and the ground bus is the straight-through wiring type.

For additional data, circle item 1137 on the coupon on page 63.

Paragon time switch noted for compactness

NEW FLEXIBILITY and compactness are combined in the revolutionary 3700 Series Time Switch introduced by Paragon Electric Co., Two Rivers, Wis.

The unit has been designed to provide automatic control for all makes of window air conditioners. The time

switch "gets to the office early" and turns on the air conditioner before business hours. It also "stays late" to turn it off.

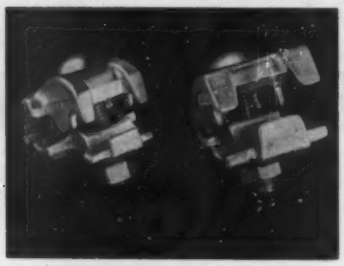
The seven-day dial allows for different settings for each day as well as Sunday and holiday cutout. The switch can also be manually operated without disturbing the sequence of automatic operation. The complete flexibility stops unnecessary air-conditioner operation.

Suitable for use on air-conditioning units up to and including one-ton capacity, the new 3700 Series is enclosed in a drawn steel case, finished in a neutral color to blend with modern decor. Designed to use existing cord set for easy installation. Furnished standard with 1 hp, D.P.S.T. contacts to comply with national and local codes. Size: 7-½ inches x 4-¾ inches x 3-⅜ inches.

For additional data, circle item 1138 *on the coupon on page* 63.

Interlocking fingers totally enclose cable

PARALLEL CONNECTORS, types LC-51C and LC-81A, recommended for A.C.S.R., aluminum and Amerductor, have been especially designed and engineered by Anderson Brass Works, Inc., Birmingham, Ala., to provide maximum contact surface in



the cable grooves. Interlocking fingers on both top and bottom members are designed to completely enclose both main and tap. This containment of the cables insures minimum distortion under pressure, and prevents both connector and cable deterioration.

Long, "fumble-proof" bolts exert straight pressure without distortion regardless of cable size combinations. Both top and bottom members are made of high-strength cast aluminum alloy, heat treated. Both types, LC-51C and LC-81A, are furnished with hot-dip galvanized steel bolts, nuts and lock washers, or high strength aluminum hardware with Alumilite finish.

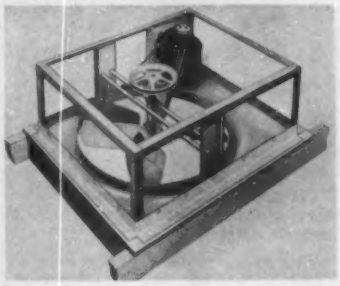
For additional data, circle item 1139 *on the coupon on page* 63.

Lau Blower introduces 'little brother' fan

LAU BLOWER CO., 2019 Home Ave., Dayton 7, Ohio, has announced a new "little brother" to its already established "Niteair" Rancher fans as part of its 1955 line.

The new product is a 22-inch fan and has been added to a line already featuring 24, 30, 36 and 42 inch fans designed as residential exhaust cooling devices. Though the new fan is smaller than its colleague, it does a man-size job of moving air at the rate of 3800 cfm. It uses a 1/3 hp motor, and was designed specifically for use in modern small homes with pre-fabricated truss roof construction.

The 22-inch "Niteair" Rancher will fit between joists on 24-inch



centers simply by moving one truss brace. No cutting is required. The new fan comes completely assembled and ready for installation; or as a "Kooling-Kit," knocked down for installation by the home handyman.

The new addition to the line has all the features of the larger fans, including sturdy all-welded construction, thermal overload protector in the motor; rubber cushion mounting for quiet operation; and lifetime lubricated sealed ball-bearings. It is belt driven for maximum air pull and can be used for vertical as well as horizontal placement.

For additional data, circle item 1140 *on the coupon on page* 63.

G-E mercury switch has lighted handle

A NEW MERCURY SWITCH with a lighted handle has been added to General Electric's mercury switch line, according to an announcement by the company's Wiring Device Department, Bridgeport 2, Conn.

A tiny neon light in the handle of this switch glows when the switch is in the OFF position, making it ideal for such locations as bathrooms, bedrooms, long hallways, entrance ways, nurseries, hospital rooms, and hotel rooms. It also can be used as a "reverse" pilot light for installation at the head of basement stairs, foot of attic stairways, etc. In such locations, the lighted handle not only makes these switches easy to locate, but indicates that the light in basement or attic is turned OFF.

Tests indicate that under normal operating conditions this neon-lighted handle will give 10-15 years of service. Cost of operation for a switch will vary with local utility

Light & Power fluorescent fixtures are made in our own plant from start to finish . . . not merely assembled there. That's why we are among the few equipped to assist you in planning and research on specific jobs—and then go ahead and manufacture the complete fixtures to your particular requirements.

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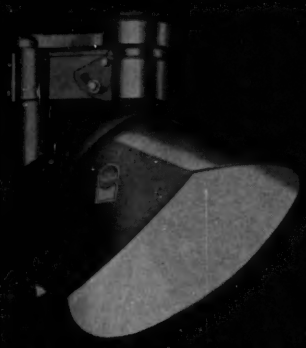

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One or two bolt holes

Wire sizes Nos. 14 to 1,000,000 CM. One-piece construction—easily installed. Body is well proportioned to withstand excessive use, with ample thread area. Makes tenacious grip on stranded conductors, forcing contact with each wire in strand, thereby insuring utmost in conductivity—bottom of tongue surface is ground. Not susceptible to release under vibration.

Write for dimensions and prices

KRUEGER & HUDEPOHL, INC.
VINE AT THIRD E. S. CINCINNATI 2 OHIO

rates, but at an average rate, this cost is estimated to be about two cents a year.

The catalog number of the switch is GE5531-2 and it is available with ivory handle only.

For additional data, circle item 1141 on the coupon on page 63.

'PK' armored cable clamp affords exceptional speed

EXCEPTIONAL SPEED and ease of insallation is provided by the new Type "PK" armored cable clamp recently announced by O. Z. Electrical Manufacturing Co., Inc., 262 Bond St., Brooklyn 17, N. Y.

Designed for terminating interlocked armored cable, this clamp

offers such features as slotted hex bolts that may be tightened either by wrench or screw driver and a flanged body that eliminates the need of an extra lock nut for securing the clamp in the knock-out hole.

The Type "PK" armored cable clamp has a malleable iron body with a clamping cap that fastens to the body by means of slotted, hex-head bolts. It is designed with ample thread length for use with all standard conduit fittings and terminators from one-inch to five-inch and is available for interlocked armored cable ranging in size from .99-inch O. D. to 4.38 inches O. D.

Bakelite insulating bushings are provided to protect the individual conductors at the point where they emerge from the fitting.

For additional data, circle item 1142 on the coupon on page 63.

Columbia-UF designed for corrosive locations

COLUMBIA CABLE & Electric Corp., 255 Chestnut St., Brooklyn 8, N. Y., manufacturers of cable, conduit, and building wire, announces production of Columbia-UF, underground feeder and branch circuit cable.

Columbia-UF is a specially designed, all thermoplastic cable tested and approved by Underwriters' Laboratories and recognized by the 1953 National Electric Code for use in wet, damp or corrosive locations. Columbia-UF is approved for direct earth burial in branch and feeder circuits when provided with overcurrent protection. It is highly resistant to acids, alkalis, lubricants, corrosive fumes and water. It is resistant to fungus, corrosion, and it will not support combustion.

Columbia-UF is available in single conductor, sizes 14 to 4 AWG, and in two and three conductor flat construction, sizes 14, 12 and 10 with and without ground wire.

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OSMOSE WOOD PRESERVING CO., INC.
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Manufacturer of steel expanding anchors, steel plate anchors, cone anchors, and malleable anchors is interested in representation by established manufacturers' representative selling pole line equipment to utility companies. Address inquiries to ELECTRICAL SOUTH, Box 705, 806 Peachtree St., N. E., Atlanta 5, Georgia.

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Leading rigid conduit manufacturer wants agencies for territory consisting of States of Florida, Georgia, Alabama, Tennessee, Mississippi, and Louisiana. Advise related lines now handling, territory presently covered, and accounts now selling. Replies strictly confidential. Write Box 707—ELECTRICAL SOUTH—806 Peachtree Street, N.E., Atlanta 5, Ga.

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desires electrical supply lines for Southern Texas and Louisiana territory. Write Box 706 care ELECTRICAL SOUTH—806 Peachtree Street, N.E., Atlanta 5, Georgia.

LIGHTING FIXTURES

Sta-Brite Fluorescent Mfg. Co., P. O. Box 6352, Miami, Florida has added a complete line of contemporary lighting fixtures, Hi Hats, Bullets, recessed, etc. in addition to their extensive line of Fluorescent and Slimline Fixtures. Catalog on request.

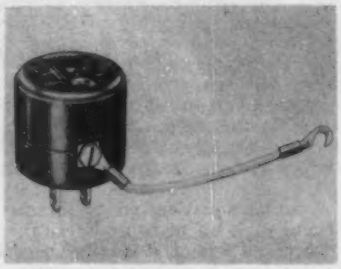
Columbia-UF is used in barns, where chemical and corrosive fumes have a deteriorating effect on ordinary wiring. It is also used as underground feeder cable between houses, garages, factories and outdoor lightposts.

For additional data, circle item 1143 on the coupon on page 63.

Harvey Hubbell adds heavy-duty adapter

AN EXTREMELY RUGGED, new three-wire composition grounding-type adapter designed to adapt standard two-wire convenience outlets for use with new three-wire grounding caps has been introduced by Harvey Hubbell, Inc., Bridgeport, Conn.

This new adapter anticipates the demand by electricians for a heavy-



duty device to replace "peanut shell" adapters now being used with portable machine tools and other equipment. This quality adapter will withstand the most punishing rough treatment without cracking, chipping or breaking. This is largely due to the rugged composition material used for the body, considered far stronger and more durable than other materials commonly used in units of this type.

Other features include parallel polarized slots and "U" shaped grounding slot; parallel polarized blades, one narrow and one wide; hook-type terminal for easy connecting to ground; green three-inch thermoplastic lead and double-sided contacts.

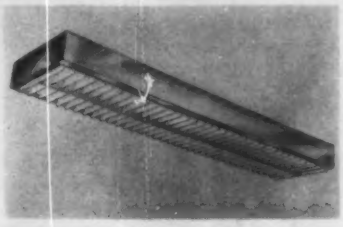
Designated No. 5273-L (with lead) and rated at 15 amperes-125 volts, this new Hubbell adapter meets U.L. specifications and is designed to ASA standards.

For additional data, circle item 1144 on the coupon on page 63.

Shallow fluorescent unit announced by Smithcraft

A NEW DEVELOPMENT in fluorescent lighting fixtures has been introduced by Smithcraft Lighting Division, Chelsea 50, Mass. Called the "Sheraton," this modern and distinctive fixture is only 3¼ inches in depth, and can therefore be utilized as a "surface troffer." As a result, the Sheraton is ideal for low-ceiling school rooms and offices.

The Smithcraft Sheraton incorporates translucent plastic sides to softly illuminate the adjacent ceiling,



and a one-piece steel louver with a cut-off of 30 degrees crosswise, 45 degrees lengthwise. The fixture is available for two or four 40 watt rapid-start, bi-pin lamps (in four-foot and eight-foot housings), as well as two or four 48-inch or 96-inch Slimline lamps.

For additional data, circle item 1145 on the coupon on page 63.

Offset connector added to Gedney fittings line

GEDNEY ELECTRIC CO., RKO Bldg., Radio City, New York 20, N. Y., announces an addition to the Gedney fittings line—a new offset connector for threaded rigid conduit. This fitting fills a genuine need by eliminating the necessity for offsetting conduit at the knockout entrances of standard boxes. It saves important installation time and presents a very neat and workmanlike appearance.

Like all Gedney fittings, this new offset connector is made of malleable iron to minimize breakage. In addition, it is cadmium plated to assure long service life. It is available in a range of sizes from ½ inch to two inches.

For additional data, circle item 1146 on the coupon on page 63.

Trumbull breaker has trip indicating handle

THE TRUMBULL Components Department of General Electric Co., Plainville, Conn., has announced the introduction of a new Type "R" circuit breaker for the residential construction market.

The Type "R" circuit breaker incorporates many features, including a positive action mechanism which enables the contacts to break instantly thereby protecting them from excessive burning and arcing.

WIRE with ARMORED CABLE!

Thousands of electrical contractors prefer to use Armored Cable. Over SIX BILLION FEET of this prefabricated, metal-protected cable have been installed over the past 20 years.

Specify

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American Cable is made with specially designed machinery which assures a uniform product of the highest quality. Exclusive features, built-in to this cable, make it easier to use, afford added protection and assure a long-lasting installation.

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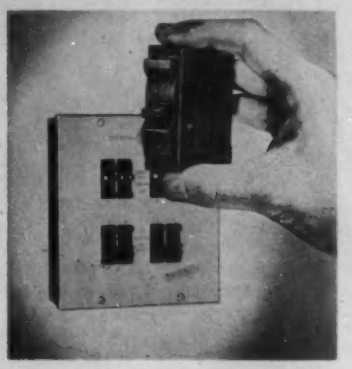
In addition, Type "R" has a trip indicating handle. When a short circuit or an excessive overload trips the breaker, the handle moves to a mid position between On and Off. One glance at the load center quickly shows which breaker is tripped. The circuit is closed by



moving the handle to Reset and then to On. Even if the handle is held on, trip free contacts will open under an excessive overload or short circuit. A new projecting guard protects the Type "R" handle.

Straight-in wiring, plus a simple plug-in arrangement for easy mounting in a stab assembly provides easy installation.

A full line—15, 20, 30, 40 and 50 amperes, 120 volts ac, single pole Type "R" circuit breakers is available. These units are UL listed.

For additional data, circle item 1147 *on the coupon on page* 63.

Porcelain offering new dead end clamp

A NEW MALLEABLE iron dead end clamp for hot line work, featuring "Captured Keeper" U-bolts fastened directly to the keeper, has been announced by the High Voltage

Division, Porcelain Products, Inc., Parkersburg, W. Va.

Cable range for the new clamp is .20 inches to .50 inches. It is ideal for hot-line application, maintenance work, and also speeds installation on original construction.

It is suitable for use on ASCR No. 4 through 1/0; it is also suitable for use on copper, copper weld, or Amerductor. The clamps can be furnished with aluminum or copper-liners if desired.

For additional data, circle item 1148 *on the coupon on page* 63.

G-E announces new motor starting relay

A NEW MOTOR STARTING RELAY, smaller, less expensive, and of a more advanced design, has been announced by the General Electric Company's Appliance Control Dept., Schenectady 5, N. Y.

Designed specifically for starting single-phase capacitor-start, and capacitor-start capacitor-run fractional—or integral-horsepower motors, the relay can be used to replace the centrifugal switch. It is particularly applicable where adverse atmospheric conditions exist or where it is desired to have remote control incorporated into an explosion-proof case, according to company engineers. Most common application for the relay is in the starting of single-phase, hermetically-sealed, refrigerator compressor motors, they said.

Accurately calibrated at the factory to pick up at a predetermined voltage, the relay coil is wired across the starting winding of a single-phase motor. In operation, the relay picks up only when the motor comes up to speed, increasing the induced voltage in the starting windings.

The new relay, designated type ARR-1 is available in ratings up to 5 hp, 115/230 volts.

For additional data, circle item 1149 *on the coupon on page* 63.

Life-Line loom motors added by Westinghouse

A NEW SERIES of Life-Line loom motors designed for longer life, additional cooling, and with stronger construction are available from the Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

Available in ¾, 1, 1-½, and 2-hp ratings at 1800 or 1200 rpm, 2 or 3 phase, these totally-enclosed non-ventilated motors have oversize bearings with a special grease to give longer motor life. The finned construction of the cast iron end-brackets increases motor strength and reduces overall motor temperature. A heavy-duty rotor with a shrunk-fit flywheel provides the high inertia required to smooth out fluctuating loom loads.

Designed with sufficient overload capacity to break in new looms, these new loom motors are available in either foot-mounted or three-point suspension mounted models. They may be obtained with either a con-

duit box or a multi-conductor squeeze connector.

For additional data, circle item 1150 on the coupon on page 63.

New Outage

(*Continued from page 29*)

filter consists of three extremely sharp frequency selective amplifiers utilizing bridged T circuits in a feed back loop to provide the selectivity. Figure 4 illustrates the indicator unit and Figure 5 an individual indicator channel in block form.

As shown in Figure 5 each stage attenuates all frequencies except for the desired frequency by 20 db, so that a total of 60 db attenuation is produced in each indicator channel. This attenuation is achieved for all frequencies 3% on either side of the channel frequency, making it possible to utilize 50 audio frequencies in the audio band between 200 and 1000 cycles.

Reeds used in the modulators and bridged T's used in the indicator channels are designed to hold their frequencies within plus or minus ½% of the nominal value over temperatures ranging from −40°C to +85°C and including manufacturing tolerances. The operating point of the relay stage in the channel is designed to permit signal voltage variation of +10 db or −20 db without resulting in false indication. Signal variation due to carrier fluctuation is reduced by AVC in the receiver which permits a maximum of plus or minus 2 db change in audio output for a plus or minus 12 db change in carrier level. It would therefore require a 20 db rise or a 30 db drop in audio sideband voltage at the carrier receiver input before false indications result in the indicator.

In designing each component of the Moduline system care was taken to simplify its installation and tuning as much as possible and to make its operation independent of changes in line characteristics, noise, temperatures and power supply voltages.

System tested 6 years

Experimental and pre-production equipment of this type has been operated for a period of over six years in various parts of the country. Data obtained under widely varying climatic conditions and severe lightning exposure have permitted the design of equipment which will operate with a high degree of stability in extremely unfavorable situations. Every effort has been made to use components which will take the wide temperature variations encountered and ruggedized tubes have been used in all circuits. Final tests of the pre-production model have proven the efficacy of these design efforts.

Illustrations show the installation of the Moduline Outage Monitor on a rural distribution line in northern Florida. This equipment was experimentally operated on this rural system for five months during the summer and early fall of 1953. It underwent severe lightning storms in an area of extremely high ground resistance without damage to any components due either to surges, high temperatures or high humidity.

Small plant distribution

(*Continued from page 27*)

proof one-story construction with concrete floor and roof.

General lighting in our entire plant is obtained from continuous row open channel two tube fixtures using F96T12/CW lamps, mounted on our 12-foot ceiling. One tube per 43 square feet of floor space brings the light level at bench top to 45-foot-candles which is adequate for most purposes.

Light for close work

Lighting of small surfaces for close work is always a problem and difficult to achieve from overhead fixtures. Flexible arm incandescent fixtures are used on machines where individualized adjustable high level lighting is required on uneven surfaces.

Two tube fluorescent adjustable arm fixtures are used on assembly benches for precision work where more lighting is required than that obtained from the overhead lighting.

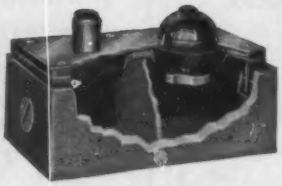
Space economies

Paint spray booths present more of a problem than other areas. Our only solution to the lighting in this area to date is sufficiently large wattage incandescent explosion-proof fixtures which require continual cleaning. The necessary exhaust fans and controls have been located outside the booths so that we would not have to use costly explosion-proof equipment.

Our air conditioning system is connected with and operated from

Latrobe PRODUCTS

FLOOR BOXES • WIRING SPECIALTIES



No. 252-R Two Gang Adjustable Floor Box

Dependable, trouble-free service has always been the chief appeal of "Latrobe" Floor Boxes and Wiring Specialties.

Easy and quick to install, "Latrobe" products serve long and well.

Floor Boxes • Cover Plates • Pipe or Conduit Hangers • Gang Boxes • Nozzles • Fish Wire • Cable Supports • Junction Boxes • Insulator Supports • Staples and Cable Clips

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LATROBE . . . PENNSYLVANIA

a time clock that shuts it off for the night and starts it about one hour before the shift comes on mornings. The control circuits for the air conditioning system are energized from two cascaded magnetic contactors operated from start-stop push buttons. This arrangement monitors all three phases and immediately disconnects our 153.5 hp air conditioning load if there is even a momentary interruption of only one phase, such as by lightning. This prevents any single phasing of the equipment.

With our present fully loaded main switch, this monitoring system saves blown main fuses. After an interruption, the air conditioning control system must be manually put back into service. Six time delay relays in the control system spreads the starting time for all of the equipment over a period of one minute. This reduces the surge current in starting to the maximum specified by our electric service company, and also saves main fuses. Connection to the time clock has served as a convenience and possible money saver, for no one forgets to turn off the air conditioning at night.

As a small plant we have found it more economical to have our internal plant telephone system wired independently of outside telephone communication. We have parallel conduit lines all over the plant buildings to provide for outside communication and a completely different set of pipes and wires for inside communication. Our public address system is connected to one line of our internal telephone system. With this arrangement any person from a telephone can dial or page any other person in the plant. This facilitates communication between production control and shop foreman, etc. Despite the double wiring system and 55-line switchboard we have found this arrangement cheaper for our size plant than a subdivision of an outside telephone system.

It is an open question for the small plant as to how and where it puts its capital in the planning of electric distribution. While an overhead busway system may prove more convenient to the big future plant, setting it up in an assembly area of a small and growing plant would require foresight and some degree of certainty in planning for future expansion.

Virginia utility men

(*Continued from page* 30)

not reach the floor of the Senate and the whole bill must be introduced again when the new Congress convenes next year. The central issue is whether the government should be allowed to develop a project which is purely for the production of electric power and has no multi-purpose aspects such as irrigation, flood control or navigation.

Citing a two billion dollar deficit in the electric wiring adequacy of America's homes, Harold H. Watson, Construction Materials Division, General Electric Company, Bridgeport, Conn., urged the utility management representatives present to support adequate wiring programs in their territories. He pointed out that in the past the electrical industry as a whole had been eager to sell the idea of electric living, the "take it home and plug it in" concept, and had neg-

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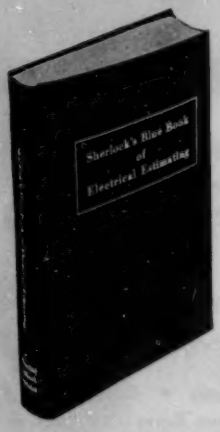

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lected to emphasize the importance of the electric distribution system in the home. He said that obstacles to adequate wiring of both new and old homes in the past have been the homeowner's unconcern about the existence of an electrical distribution system in his building, sales attention to the electrical appliance itself with no concern for the power supply, and the competitive edge afforded builders by a minimum electrical installation.

Mr. Watson reported as signs of progress the aggressive campaigns by some utility companies to sell and finance rewiring installations in their territories, liberalization of F. H. A. mortgage valuation of adequate wiring, more interest by financial institutions financing rewiring jobs and recognition by dealers and others that wiring needs to be sold with many heavy appliances.

At the Association's annual dinner, J. Roger Deas, director of industrial and public relations, American Can Company, New York, N. Y., spoke on "The Power of America," contrasting conditions in 1915, when the Association was founded, with present-day conveniences. He pointed out that the availability of electric power in large quantities had made possible the mass production industries which turn out automobiles, home appliances and other goods that make America's standard of living the highest in the world.

During the conference delegates heard reports on the activities of the Association's committees working in the fields of area development, accident prevention, load building, rural development and public relations.

All-electric homes

(*Continued from page* 23)

president and resident manager of the St. Regis Paper Company's new mill at Jacksonville. "The use of a heat pump as a combination heating and air conditioning unit is excellent," he says, "for convenience and clean atmosphere within the house. It means, of course, that we have no fumes or other disturbing factors from our heater." Mr. Ferguson is no stranger to the wonders of electricity, for the paper mill he manages is 100 per cent electronically controlled and operated.

The Clifton Bluff homes range in size from three bedrooms and two baths to four and five bedrooms and three baths, with 2,000 to 2,400 square feet of floor space on spacious lots varying in size and shape from 90 by 225 feet to 120 by 125 feet. Kitchens were furnished with electric dish washers and built-in stoves, with 220-volt wiring installed for clothes washers and dryers. A feature of all homes is outside floodlighting with a minimum of four lights for illuminating front entrance, garage and patio.

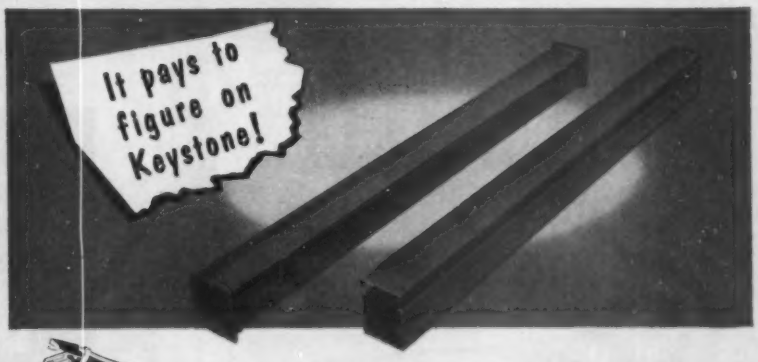
TV advertising pays

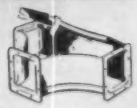
Sale of more than a half million dollars worth of homes within a few months was accomplished largely by a combination of newspaper and television advertising, with the latter predominating. A full-page advertisement in local newspapers announced the showing of a demonstration home which was visited by more than 5,000 persons on a Sunday. Pictures of the homes were shown on successive Sunday afternoon TV programs titled "Your Home Today," sponsored by four concerns in the building field. On this half-hour program, architects are invited to present their designs for public viewing. The publicity given the Ellis homes brought more than 30,000 persons to inspect them before they were all sold. Location of the subdivision on the St. Johns River and beauty of the designs, in which glass is used profusely, ranked with the electrical features as strong selling points. One home, for example, has 72 feet of glass on the side overlooking the river. Most of the houses were sold to people of adequate means on conventional loans of 60 to 70 per cent of their cost.

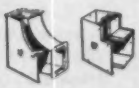
Operation costs

Experience of Clifton Bluff homeowners is that operation of these completely electrified homes costs about $25 a month on the average, of which $10 to $12.50 is for all utilities except heating and air conditioning. Clifton Bluff has its own water wells, from which water is metered to the homes at an average cost of $2.50 a month for supplying 5 horsepower units. The discharged water is used for lawn sprinkling.

Several hundred homes in the Jacksonville area are now equipped







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Share of tax relief

(*Continued from page* 32)

and June of 1960.

Corporations with less than $100,000 of anticipated tax liability will continue to pay 50 per cent of their tax in March and 50 per cent in June of the year after the income is earned.

A penalty is applied for substantial underestimate of tax.

Two-year loss carry-back

Under the old tax law, if you suffered a net loss one year, the impact might have been softened somewhat by a carry-back to the preceding tax year. This carry-back generally meant you received a refund of some or all of the taxes you had paid the year before. Any losses not absorbed in this way would be carried forward for as many as five years following your loss year. These carry-forwards would reduce your taxes in later years, but they were no help in bringing in immediate cash. Now the new law provides for a carry-back for two years instead of one, in addition to the five-year carry forward. In many instances, this will mean that greater refunds of prior taxes will be available to add to your working capital.

These are only the highlights. Over 3,000 technical changes have been made in this colossal overhauling of the federal tax code. You may have to lose some sleep before you understand all the provisions that are important to your particular business. But once you do, chances are you'll be happier with the new law than you were with the old.

Know the law

(*Continued from page* 34)

what the cost of performing the contract would have been, a jury decided that the actual difference between the contract price and the cost of performance would have been $3,112.50, and the contractor was given judgment for that amount, plus interest and costs.

In a case of this kind, the contractor's lawyer will have to be sure to present evidence from which the judge or jury can approximate what it would have reasonably cost the contractor to complete performance of his contract. It cannot be left to guesswork.

The Court of Appeals said that where better evidence is not available, estimates upon which the contract price was based may be shown as indicating what the cost of labor and materials would have been. The fact that equipment had been ordered at a certain price was proper evidence.

Difficulty in arriving at probable total cost would apply to the probable cost of labor. That cost could be established by testimony of witnesses qualified to express opinions on the subject. But the testimony would be subject to contradiction by other witnesses and subject to cross-examination as to the grounds on which the opinions were reached.

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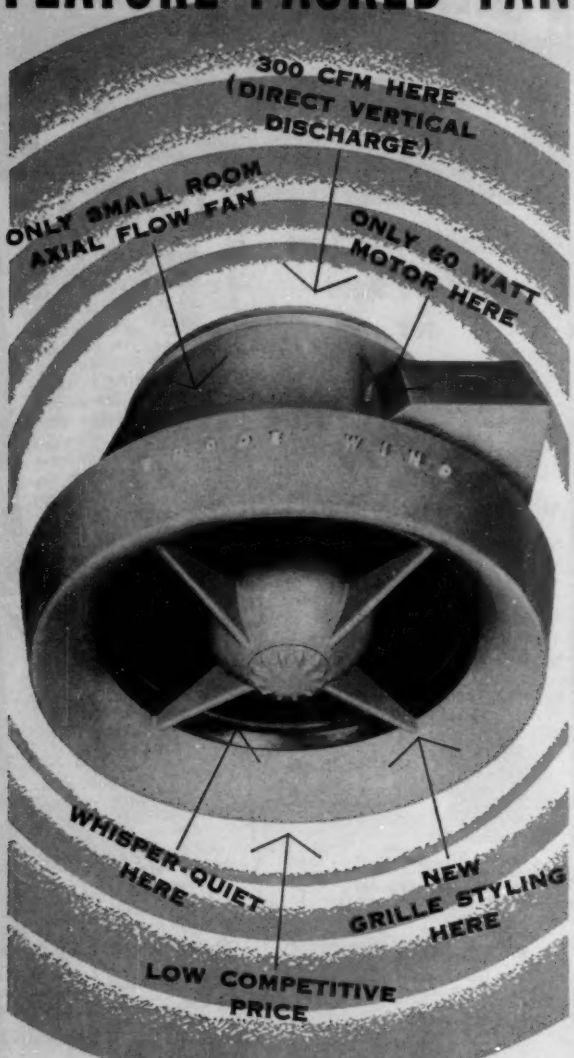

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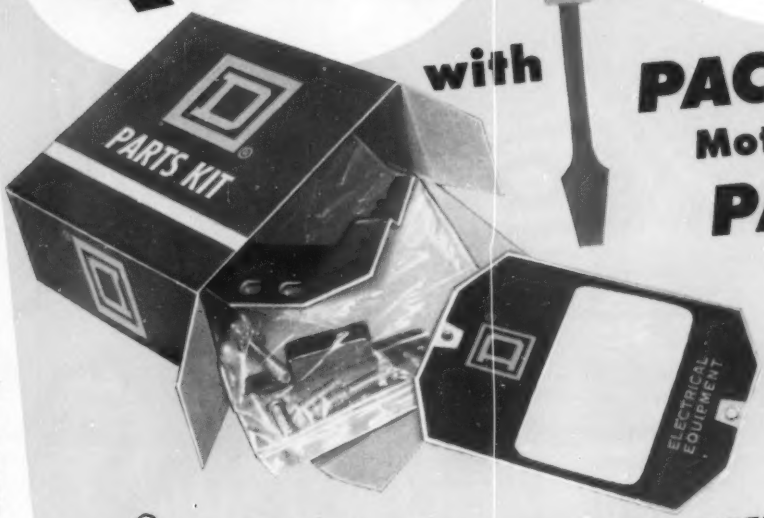

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Easy-to-read catalogs, simplified motor control and overload relay selectors, illustrated service bulletins...these all combine to assure *quick changes* through easy parts identification.

EASY to Buy!

Conveniently packaged and labeled conversion parts are immediately available "off-the-shelf" from nationwide network of authorized Square D electrical distributors.

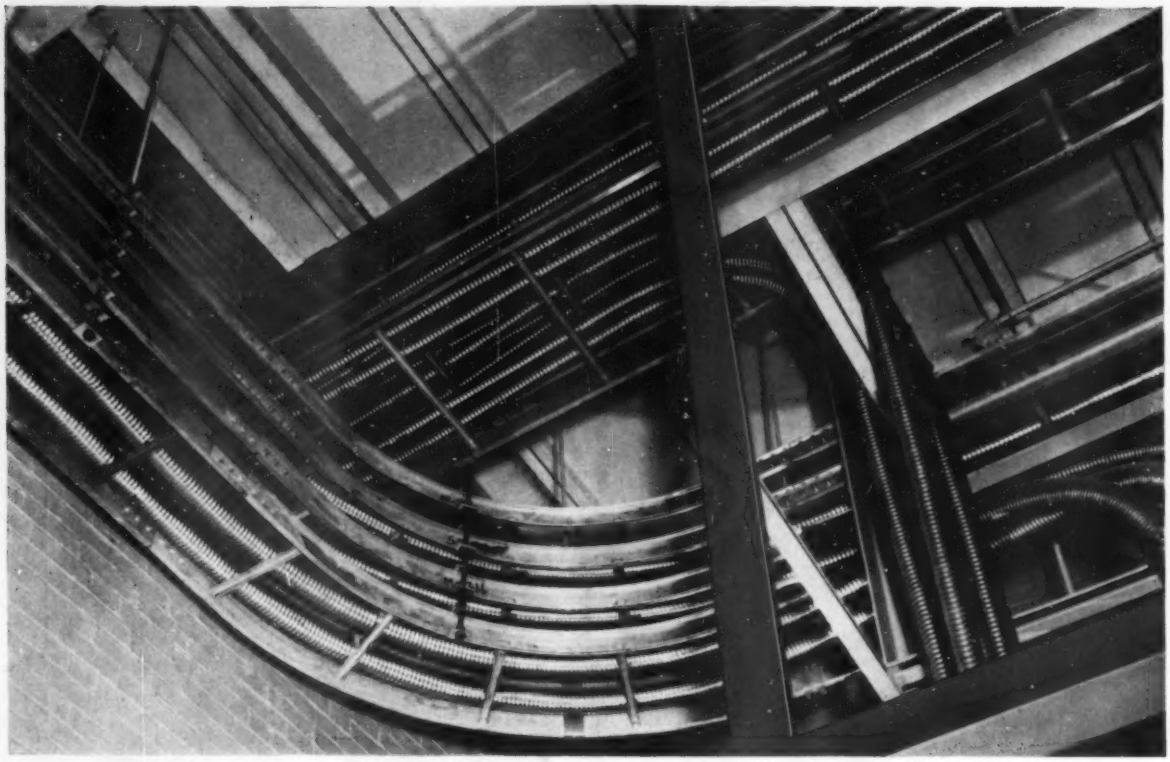
FASTER to Install!

Conveniently packaged parts can be installed using only a screw driver and without disturbing any wiring.

Write for Bulletin 9999. Address Square D Company, 4041 North Richards Street, Milwaukee 12, Wisconsin.

ASK YOUR ELECTRICAL DISTRIBUTOR FOR SQUARE D PRODUCTS

SQUARE D COMPANY

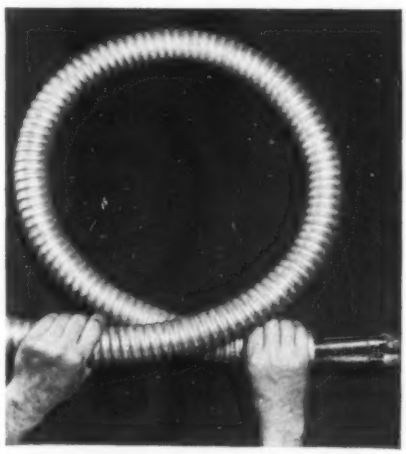


HOW TO SIMPLIFY FEEDER INSTALLATIONS

Solve the problem of installing cable in congested areas with a G-E V-c interlocked armor cable system

The easiest way to speed installation of primary and secondary feeder systems is to use lightweight, flexible G-E interlocked armor cable—indoors or outdoors. Easily-installed racks or troughs can be attached to existing structures. Corners and long unbroken runs are no problem because the cable is flexible, and is supplied in lengths to meet the requirements of the job. This cable system weighs only about a third as much as conventional cable and conduit installations, and the small over-all cross section of interlocked cable permits easy installation in crowded areas. Splicing is a simple mechanical job—easily done by electricians on the site.

For more information see your G-E Construction Materials distributor or write Section W142A-1124, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.



The flexibility of G-E interlocked armor cable saves layout and installation time because the cable can be run easily around corners and over beams.

Progress Is Our Most Important Product

REWIRE AMERICA... WITH GENERAL ELECTRIC WIRING SYSTEMS

GENERAL ELECTRIC